

The Canadian Builder and Carpenter

PUBLISHED ONCE A MONTH BY THE COMMERCIAL LIMITED

Vol. 4

TORONTO, AUGUST, 1914

No. 8



Uncle Si Says:

"There's a guarantee that goes with every Simonds Saw that I like to read over now and then. It goes this way: 'If at any time the user of a Simonds Saw finds anything wrong with it, he's got a new saw coming, or can have his money returned. You're the man that's got to be satisfied. You can't own a Simonds Saw and be dissatisfied.' Pretty plain English, isn't it? But then the Simonds is so good that it can stand a strong guarantee like that. You know where they sell them, don't you?"

These are swiftly moving days in Canada's progress and the Carpenter who wants to keep up with the procession should buy only the best tools.

SIMONDS Hand Saws

Ask your Dealer for a Simonds Saw. If he hasn't got it we will send you one upon receipt of price, \$2.50. It will be one of the finest saws you ever purchased, skew back, highly finished, accurately ground and tapered blade made of Simonds Crucible Steel, carved and polished apple wood handle. An easy hanging saw. 26-inch length, any number of points per inch. Write for a free copy of "Simonds Carpenter Rule Booklet."

Simonds Canada Saw Co.

Limited

St. Remi Street and Acorn Ave.
Montreal Quebec

St. John, N.B.

Vancouver, B.C.

Midland Planing Mill Products

The Leading Stock Lines

Something New In Canada

3/8 Inch Square Joint Veneer Hardwood Flooring

Plain Oak

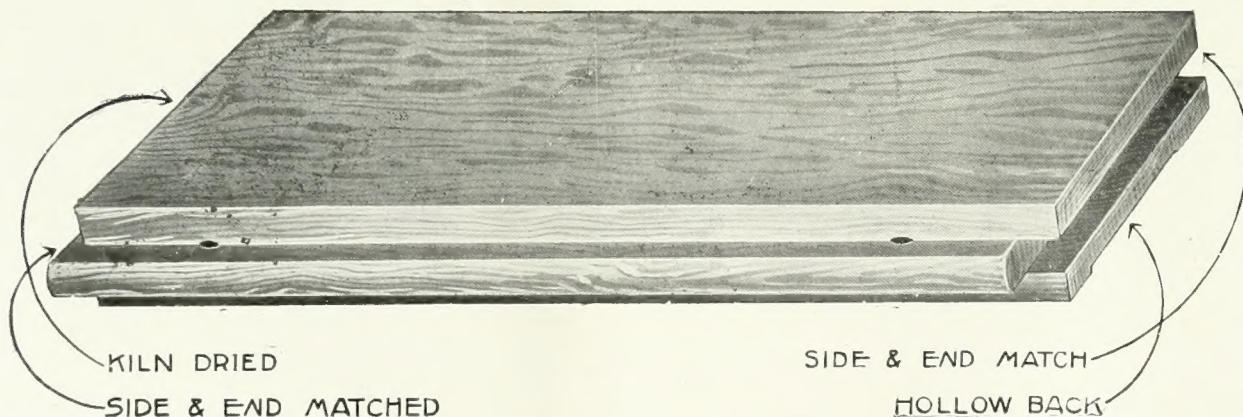
Quarter Cut Oak

This flooring has quite a demand in the United States because it costs less per square, and is cheaper to lay than the matched flooring. It is nailed through the face, punched and puttied.

We have installed the latest and best equipped machinery for manufacturing Square Joint Veneer Flooring, and are the first to specialize it in Canada.

Prices for face measure, the same as Matched Flooring, Strip. Widths are: 1½ inch, 1¾ inch and 2 inch. Grades: Clear and No. 1.

Pointers on Beech Hardwood Flooring



Pointer No. 1.—Government Tests show that in wearing qualities, it will outlast Birch or Oak.

Pointer No. 2.—Its appearance is rich and even in color, similar to Extra Selected Red Oak Stock.

Pointer No. 3.—On account of its close texture, it machines nicely and does not splinter.

Pointer No. 4.—Our stock is from around Midland, where the finest Beech and Maple in North America grows.

Pointer No. 5.—This stock runs strong to Long Lengths.

Pointer No. 6.—It makes the **Best** hardwood flooring.

Pointer No. 7.—It's the **Cheapest** hardwood flooring, only because it is the least known.

Pointer No. 8.—9/16 Beech is the greatest Bargain Buy to-day. Especially suited for Apartment Houses and Private Dwellings.

Georgian Bay Shook Mills, Limited

MANUFACTURERS FROM THE TREE TO THE FINISHED PRODUCT

Midland, Ontario

Midland Planing Mill Products

The Leading Stock Lines

Sawdust and Cuttings

A BUSY Plant in a Lean Year is a sure sign that someone is Delivering the Goods.

Orders never were so Plentiful, Business never was Better, and our Customers were never so Well Served.

Beware of Cut Prices. The Chances are you will only get what you pay for.

CONSIDER the Advantage of buying from a Concern that manufactures all the different Lines that you require. That Concern will give you Service.

The Planing Mill that saws its own Timber and makes Purchases in big Blocks is the one that can make you the Best Price.

Order early and your Goods will be at hand when you need them.

ONE Door in the Stock Shed is worth two in the Cutting-Up Room. Buy Stock Doors for Prompt Shipment.

It costs less to glaze Stock Sash, and it costs less to buy them. Make your Frames right, and save Money, Time, and Worry.

The Fir Door is the cheapest door that will take a satisfactory Hardwood Finish. It is built on Scientific Lines, and will not warp or twist.

Use 9-16-inch Beech Flooring for your Apartment Houses and Private Dwellings. It is the greatest Bargain Buy in Hardwood Flooring.

MIDLAND Specials are the lowest-priced high-grade Veneered Doors you can buy. They are made in Canada.

"Midland Brand" on Hardwood Flooring is like the "Sterling" mark on silver.

Styles in House Building change like styles in Wearing Apparel. Our Stock Designs are like the Futurist Fads—a little bit ahead of anything else.

FOR Quality, Service, and Satisfaction, place your Orders with us. We are the Kind of a Concern that wants the Kind of a Customer that You are.

Three good Catalogues to have—Midland Doors, Midland Sash, and Midland Stock Design Planing Mill Products. Write for them to-day.

Georgian Bay Shook Mills, Limited

MANUFACTURERS FROM THE TREE TO THE FINISHED PRODUCT

Midland, Ontario

The Elliot Woodworker

"In a Class by itself"



The Elliot Woodworker, patented June 1910

With the "Elliot" you can do things that no other machine can do so quickly or so well. Its usefulness and worth have been demonstrated by hundreds of users all over Canada.

The Elliot Woodworker does cross cutting, ripping, mitring, boring, grooving, dado, box frames, house out stair strings, rabbeting, grinding, sanding, etc., right on the job and at a third less than it is costing you now.

Some Recent Sales of Elliot Woodworkers

Wm. Cowlin & Sons, Contractors, New	McLean Building, Toronto
The Standard Structural Co., Toronto	J. M. Walker, Toronto
Donnenfield Bros., 2 machines	Alfred Smithers, Toronto
L. A. Beatty, Toronto	J. J. Downey, Toronto
Ontario Furniture Co., Montreal	Maurice & Frere, Montreal
D. M. Long, Inc., Montreal	C. E. Deakin, Ltd., "
St. Agathe Lumber & Construction Co.,	Montreal
R. J. Coleman, Hamilton	James Ireland, Hamilton
A. T. Smith, Hamilton	J. S. Hohner, Berlin
H. Dunken & Sons, Berlin	Pounde Bros., Stratford
L. H. Martyn, London	Construction Dept., Hospital
Jno. Thew, Welland	for Feeble Minded, Orillia

Unsolicited Praise

Your Woodworker without doubt is the best thing I have on the building. I would not do without it. Not only is it a time saver, but I am using piles of cuttings that otherwise would have been thrown away for firewood.

Yours truly,

JNO. THEW, Contractor,
High School Building, Welland, Ont.

Send for Prices and Descriptive Circulars of Elliot Woodworking Machines

The Elliot Woodworker, Limited

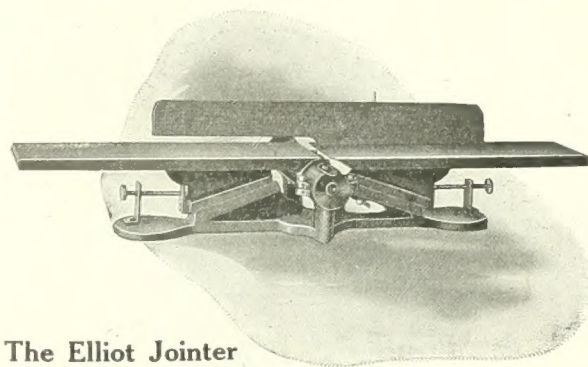
College and Bathurst Streets

Toronto, Canada

The New Elliot Bench Jointer

A Practical Jointer that meets a long felt want

This machine is light and servicable and cuts 6 inches by 3-8. It has a perfectly balanced head that can be run 5,000 R. P. M., making a beautiful smooth cut. Fence tilts 45 degrees. It is just the machine you need for edging, dressing up a small job, bevelling hand rails or casing for bay windows, and numerous other purposes.



The Elliot Jointer

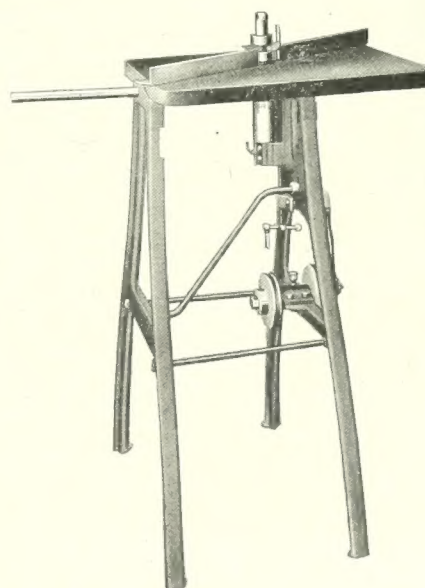


The Elliot Scroll Saw and Shaper

This is a Combination Machine that can instantly be set for scroll sawing or shaping.

Scroll saw cuts up to 2 inches thick and is useful for cutting cambers, corner blocks, fancy balusters, brackets, etc. Shaper attachment is removed when scroll saw is in use. The shaper is a high grade machine running at 5,000 revolutions per minute.

Almost any kind of moulding or shaping can be done on it. It is adjustable to use on lumber up to 3 inches thick.



Agencies for Elliot Woodworking Machines

Montreal—H. D. Hall, 103-5th Ave., Maisonneuve

Ottawa—W. A. Rankin, Bank St.

Hamilton—F. Martin, 14 Halton Ave. N.

Winnipeg, Man.—H. W. Rosevear & Son

Edmonton, Alta.—H. Rae, 1323 25th St.

Vancouver, B. C.—W. N. O'Neil Co., Seymour St.

Head Office and Factory:

The Elliot Woodworker, Limited

College and Bathurst Streets

Toronto, Can.

Standards of Practice for Business Papers

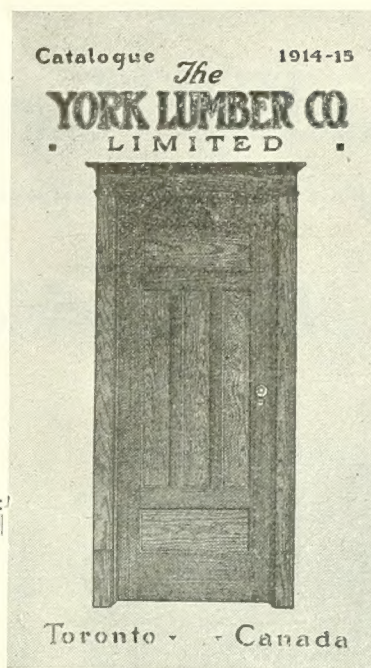
*Adopted by the publishers of Trade and Technical
Papers at the Associated Ad. Clubs' Convention in
Toronto, June 21 to 25, 1914.*

THE publisher of a business paper should dedicate his best efforts to the cause of Business and Social Service, and to this end should pledge himself:

1. To consider, first, the interests of the subscriber.
2. To subscribe to and work for truth and honesty in all departments.
3. To eliminate, in so far as possible, his personal opinions from his news columns, but to be a leader of thought in his editorial columns, and to make his criticisms constructive.
4. To refuse to publish "puffs," free reading notices or paid "write-ups"; to keep his reading columns independent of advertising considerations, and to measure all news by this standard: "Is it real news?"
5. To decline any advertisement which has a tendency to mislead or which does not conform to business integrity.
6. To solicit subscriptions and advertising solely upon the merits of the publication.
7. To supply advertisers with full information regarding character and extent of circulation, including detailed circulation statements subject to proper and authentic verification.
8. To co-operate with all organizations and individuals engaged in creative advertising work.
9. To avoid unfair competition.
10. To determine what is the highest and largest function of the field which he serves, and then to strive in every legitimate way to promote that function.

Send For Our New Catalogue of Doors, Interior Trims, Etc.

*Sent Free on
Request*



THIS new catalog is well illustrated and is brimful of new ideas for the up-to-date builder. It covers our complete lines.

“York” Doors are Semi-Hardwood Fir with Georgia Pine Panels.

“York” Window Frames and Sash; and “York” Door Frames Knock-down.

“York” Interior Trim for same which is cut to length.

Let us put a copy of the “York” 1914-15 Catalog on your desk at once. You’ll find the time-tried quality of all “York” products a feature that will build a reputation for you.

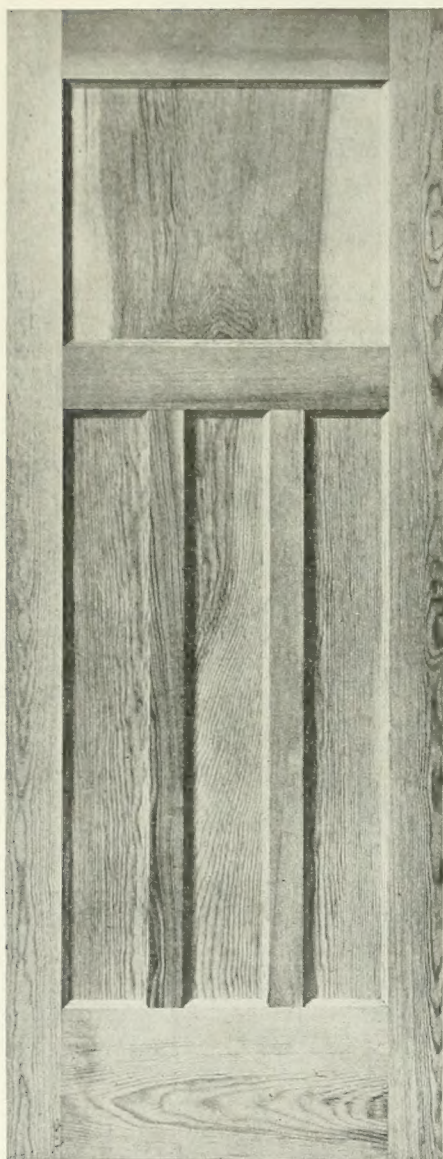
Everything in Building Material, rough or dressed

The York Lumber Company, Limited

Head Office: 1000 Gerrard St. E., Toronto

B. B. L. High Grade Planing Mill Products

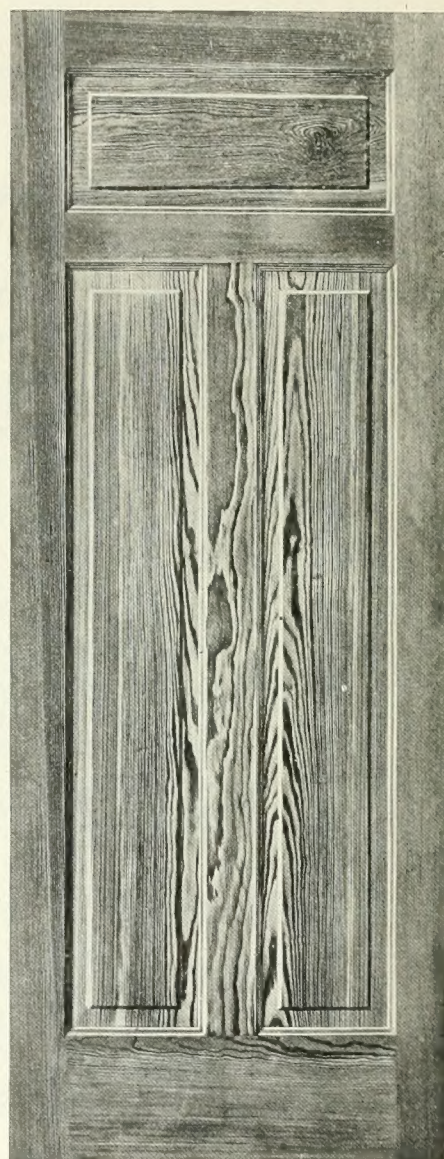
Our Superior "A" Grade Doors



No. 300

The distinctive characteristics of our products are the uniform quality, the high grades of lumber and the exceptional workmanship in manufacturing. These features, together with the most modern machinery obtainable, have placed us in a position to produce the best, and at a price consistent with your requirements.

Send us a sample order and be convinced that Grade, Price and Delivery are right.



No. 315

Benson & Bray, Limited

Midland

Ontario

B. B. L. High Grade Planing Mill Products

Write for Our New Catalogues

Price Lists and Discounts

Our Catalogue of Doors.

Solid or Veneered

Illustrates Forty of our designs which we make in White Pine, Yellow Pine, Cypress, Chestnut, Oak or any other Hardwood.

A copy on your desk will prove a valuable guide in making future selections.

Our Catalogue of Mouldings.

Sash and Columns

contains full size illustrations of all our mouldings. A great variety of new and desirable effects are included, many of which are shown for the first time.

You will find this catalogue well worth keeping on file.

Our plant is equipped to manufacture the highest grade goods at the lowest prices.

Write for these catalogues and price lists today, and make comparisons.

Benson & Bray, Limited

Midland

Ontario

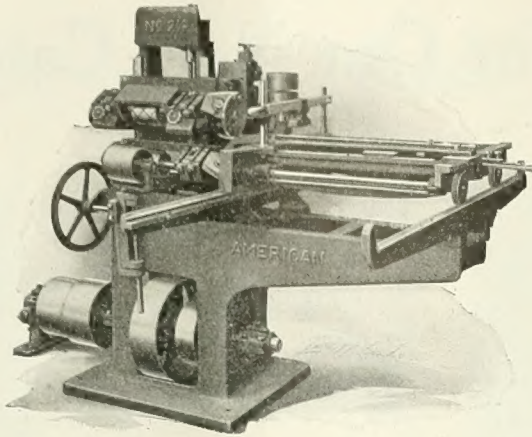
American No. 2 $\frac{1}{2}$ Tenoning Machine

Designed for Sash, Blind, Furniture and Cabinet Work

It will cut a tenon $3\frac{7}{8}$ " long at one operation and $6\frac{3}{4}$ " long by passing the material through the machine twice. Any thickness of tenon may be cut up to $5\frac{1}{4}$ " thick and 15" wide.

Head Stocks—Both are adjustable vertically by means of two screws. The top head stock has independent vertical adjustment to change the thickness of tenon, and lateral adjustment for cutting tenons with shoulders unequal distance from end of material on opposite sides. With the American the operator can center or place his tenon instantly. The cutter head spindles are $1\frac{1}{4}$ " dia. and carry pulleys 4" in dia. by $4\frac{1}{4}$ " face and run in side clamping boxes.

Cope Head Stocks—Attached to the main head stock and adjustable with them. Each has also independent vertical and horizontal adjustment. The cope spindles are $\frac{3}{8}$ " dia.



Carriage—Travels on two pair of rollers, each pair connected from end to end and mounted in a frame, hence the carriage must move perfectly true across the ways. The movement is easy under all conditions. The fence adjusts to an angle and the hold-down device is convenient and efficient.

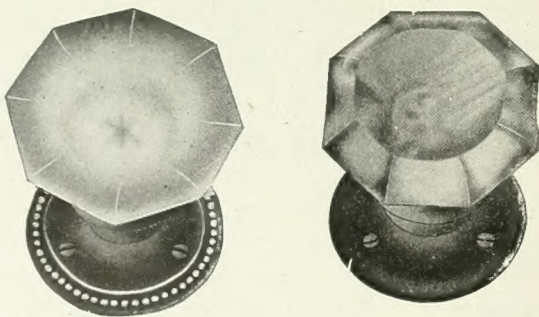
The carriage is provided with our Patent Bridge Bar and Stop Gauge, affording a large saving in the time necessary to change work and set up for another job; this a decided step forward as many users already know.

Rear Cut-Off Saw Attachment—By means of a lever, the saw may be adjusted to a graduated scale to cut off tenons at any desired length. This lever is handy to the operator and saves much time especially on job work. The attachment is driven by belt running from the cope counter which may be removed when the cut-off saw is not in use.

Countershaft—Tight and Loose (self-oiling loose) Pulleys are $11 \times 5\frac{1}{4}$ " 900 R.P.M. Write For Folder.

The Stuart Machinery Company, Limited 764 Main St. Winnipeg

A Few of Our Line of Glass Knobs



We Manufacture an extensive line of Glass Knobs, also all kinds of High-class Builders' Hardware.

Goods Guaranteed — Prices Right.

THE
Belleville Hardware & Lock Mfg.
COMPANY, LIMITED

BELLEVILLE :: CANADA

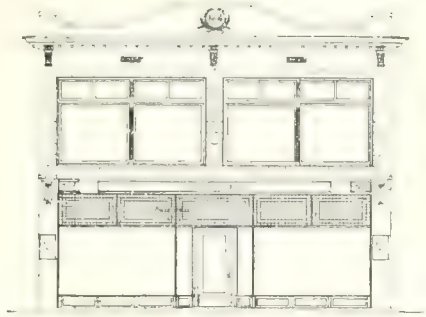
Hardwood Flooring and Hardwood Interior Finish

"WILSON BROS. LIMITED" on flooring means a carefully kiln-dried and well manufactured article. Our flooring is straightened, hollow-backed, bored, end-matched, steel polished and bundled.

We specialize in Veneered Doors to detail, also all kinds of Hardwood Interior Finish.

Write and send list and details for Quotations

Wilson Bros. Limited
Collingwood, Ontario



You Should Have Detail Drawings of the Petz Metal Store Front Construction

A big blue print together with booklet on Petz Metal Store Front Construction will be mailed if you'll ask for it.

Both blue print and Catalog are a convenient size for filing, and in these days when improved store fronts are required it's a good idea to have this information at hand.

We do not send you any flub-dubb printed matter, but confine ourselves entirely to the necessary facts.

DETROIT SHOW CASE CO.
494 West Fort St. - Detroit, Mich., U.S.A.



This building is equipped with Athey Weather Strip.

ATHEY Cloth Lined Metal Weather STRIP

NO weather strip on the market can compare with "ATHEY" for all round excellence. The following are a few of its many outstanding features:

- ☐ Keeps out all draughts and dirt.
- ☐ Absolutely dust proof.
- ☐ Prevents sash from rattling.
- ☐ The only weather strip with a cloth-lined channel in the sash.
- ☐ Effects a considerable saving in coal bills.

Write for particulars, prices, etc.

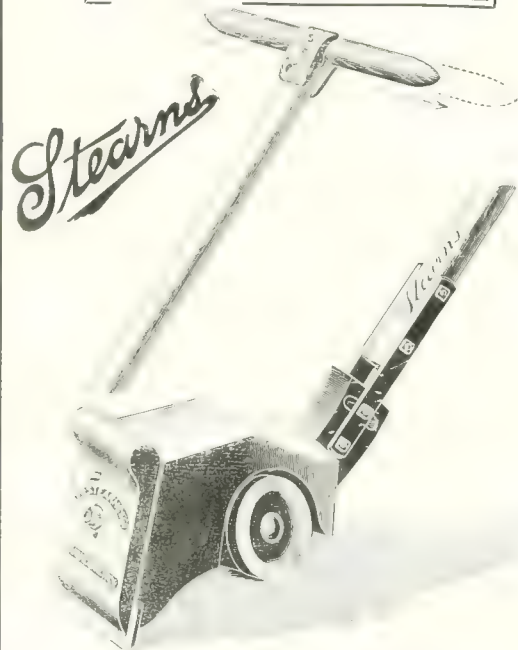
The Eberhard-Wood Mfg. Co.

Ornamental and General Iron Works

36-38 Lombard St. - TORONTO

Extra Money

Your Building Trade Acquaintance will be of value to you



ONE CARPENTER OR BUILDER IN EACH TOWN

can help supply the widespread demand for the Stearns Floor Scraper—a demand we have created through systematic advertising and conscientious manufacture. This machine is simplicity itself—no intricate, costly mechanism—and is absolutely unequalled for efficiency. Splendid surfaces quickly worked. Convenient to handle and easy to adjust. These qualities together with its popular price make the Stearns a quick seller. Our agency proposition is attractive. Get in on this opportunity for extra money—a chance to do something without interfering with your regular work.

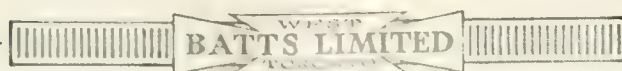
Glance Over these Efficiency Points in Stearns Floor Scrapers

Long and cross handles adjustable, also wheels recessed into the scraper, allowing close work up to the walls and in corners. Two knives furnished with each machine. Knives are used on both edges, and being made without slots, they may be used up to nearly their full width. Two of our knives are equal to half a dozen that are slotted in order that they may be firmly held in position. Blades six inches wide. Rubber-tired wheels. Does clean smooth work in a jiffy. Shipping weight 135 lbs.

Don't let somebody else get ahead of you—We offer an agency proposition which will be quickly accepted over the entire Dominion. Write at once for particulars. Learn something for your early benefit.

E. C. STEARNS & CO.

100 Oneida Street
SYRACUSE, N.Y., U.S.A.

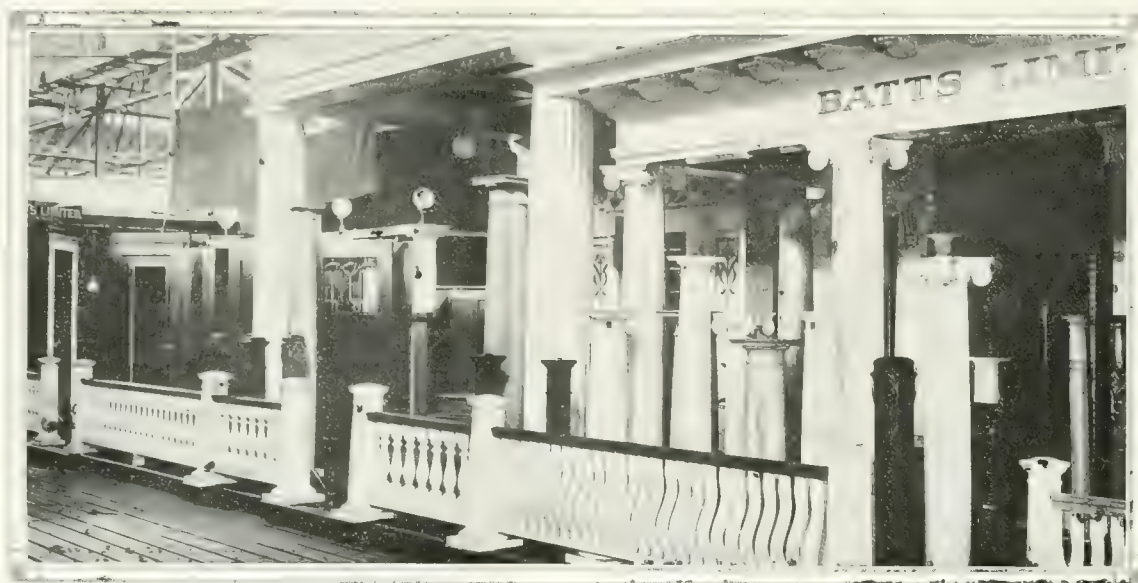


Visit BATT'S Exhibit

at the

Canadian National Exhibition

Aug. 29th to Sept. 12th. Process Bldg.



We carry in stock a large assortment of Pine and Veneered Doors, Columns, Newels and Turned Balusters.

Let us figure with you on your Sash, Trim, Stair Material and Panelling.

Write for Catalogue, showing cuts of varied assortment of goods that we carry in stock, all of which are manufactured at our own factory.

385-387
Pacific Ave.

BATT'S LIMITED

West
Toronto



BATTS' STAVED COLUMNS



Design B.L. No. 1



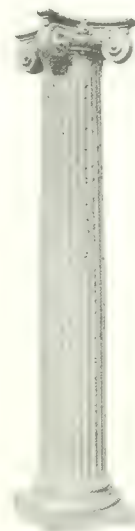
Design B.L. No. 2



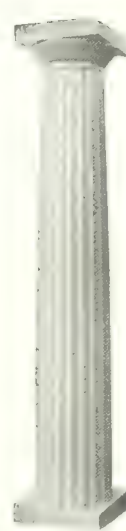
Design B.L. No. 3



Design B.L. No. 4

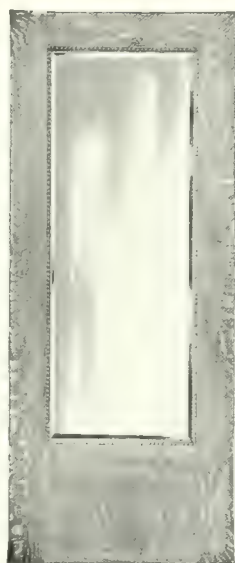


Design B.L. No. 5

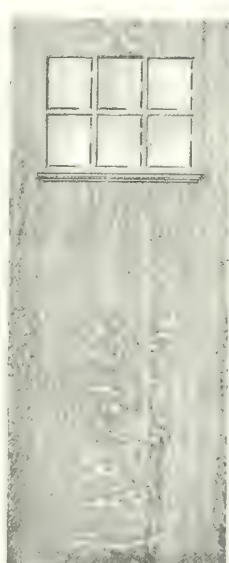


Design B.L. No. 6

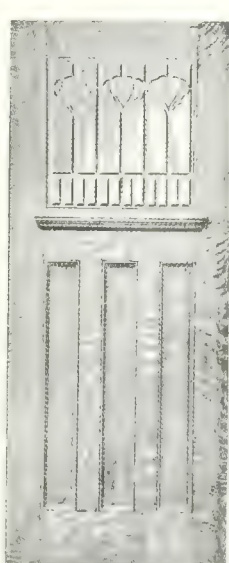
OUR FACILITIES FOR THE EXECUTION OF ORDERS FOR DOORS AND COLUMNS TO SPECIAL DESIGN ARE SUCH THAT WE CAN SATISFACTORILY MEET ANY REQUIREMENT



B.L. No. 306, 1-Cut Oak



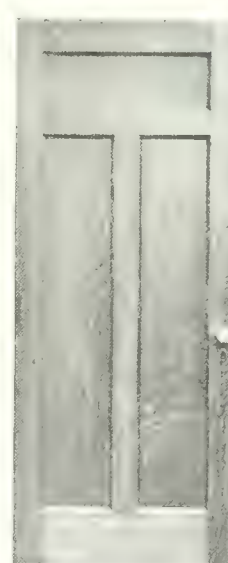
B.L. No. 312, 1-Cut Oak



B.L. 314, 1-Cut Oak



B.L. No. 316, 1-Cut Oak



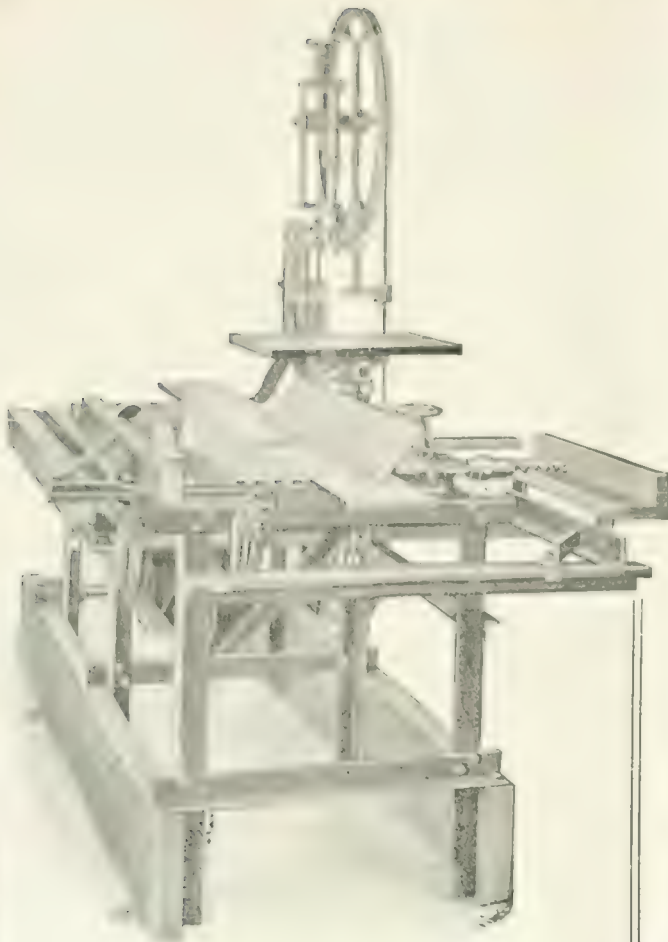
B.L. 319, 1-Cut Oak

We Specialize on Work from Architects, Plans and Details

Pacific Ave.
385-387

BATTS LIMITED

Toronto
West



Combination Woodworker

THIS MACHINE is a combination Circular Saw Table, with Rip and Cross Cut Tables; one 10-inch Rip Saw, one 8-inch Cross Cut Saw, 6-inch or 12-inch Jointer with Tapering Guide, 12-inch Square Rip Saw with 8 and 12-inch Bevel Saws. Being Adjustable, the work with counter heads mounted on rear of base.

THE MOST USEFUL machine that is economical machine possible to install in your shop. Will do all your ripping, cross cutting, band sawing, boring, planing, straightening, squaring, beveling, grooving, rabbetting, moulding, etc.

FOUR MACHINES stand ready for instant use, without any change whatever. Three men can operate all with the same time band sawing, boring and either ripping or jointing. Different cutter heads can be used in place of circular saw or one man can turn from one class of work to another, and stop off either circular saw mandrel or band saw when not in use.

POWER REQUIRED. 1 to 3 horsepower, according to work to be done.

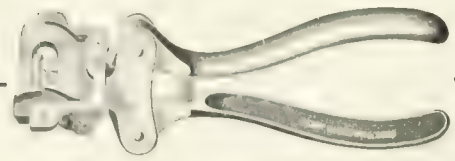
PORTABLE MACHINE. Simple, Strong and Ready-to-go with little Power.

We sell this machine at an exceptionally low price. Get our Catalogue "C" and our Thirty Days Trial Offer. We carry in stock the largest assortment of wood-working machines—Individual or Combined. Orders filled promptly.

BOURNIVAL & CO.

333-337 Notre Dame St. East, Montreal, Que.

No Guesswork About This



It is highly important that the teeth in a saw be properly set. If set too much, or not enough, or the set extends too far into the blade, then the efficiency of the saw is impaired, to say nothing of the damage that may result to the blade.

Disston "Triumph" Sawset

eliminates all guesswork. It does its work in a sure even manner—giving just the right set required, no more no less.

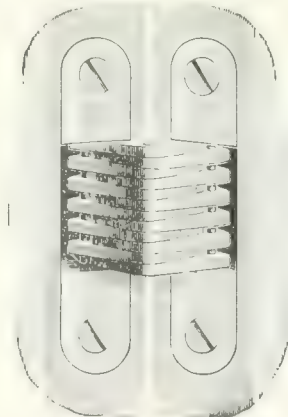
Send for circular giving complete description and instructions.

HENRY DISSTON & SONS
INCORPORATED

Keystone Saw, Tool, Steel & File Works
PHILADELPHIA, PA., U. S. A.

Soss Invisible Hinge

For use on Panel Work, Lockers Closets, Counter Flaps, Partition Doors, Cabinets, etc.



Soss Invisible Hinges are made in a variety of sizes, the largest being adapted for largest size door.

Send for circular and prices; or buy from leading Hardware Dealers

SOSS INVISIBLE HINGE CO., LIMITED

104 Bathurst St., TORONTO

**RED
S
BRAND
WINDOW
GLASS**



**GLASS
BENDERS
TO
THE
TRADE**

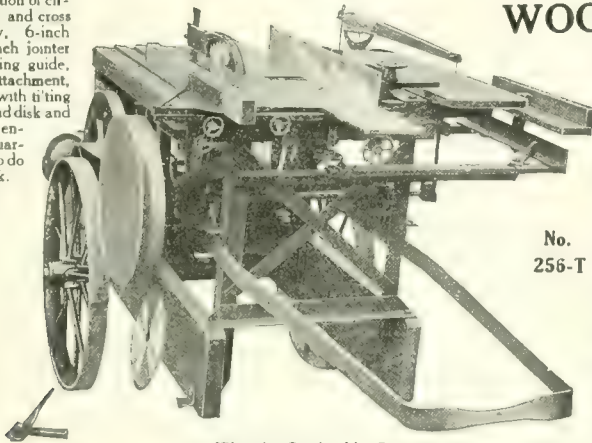
THE TORONTO PLATE GLASS IMPORTING COMPANY, LIMITED

DON ROADWAY

Plate, Window, Figured, Stained, Wired, Bent, Mirror
and Ornamental Glass

TORONTO

No. 256-T is a combination of circular rip and cross cut saw, 6-inch or 12-inch jointer with tilting guide, boring attachment, jig saw with tilting table, sand disk and gasoline engine guaranteed to do the work.



Write for Catalog No. 7

Parks Portable Single or Combination WOODWORKING OUTFITS

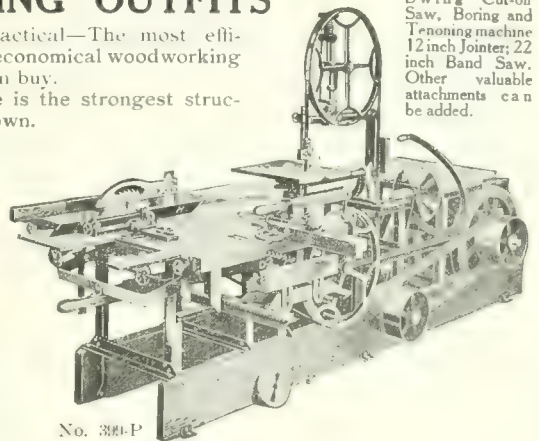
Are the most practical—The most efficient—The most economical woodworking equipment you can buy. Angle steel frame is the strongest structural material known.

Machines made in large quantities which allows us to sell at lowest prices and make prompt shipment.

No.
256-T

**THE PARKS
BALL
BEARING
MACHINE CO.**
1501 Knowlton St.
Cincinnati, Ohio

Circular Rip and Cross-Cut Saw, Swing Cut-off Saw, Boring and Tenoning machine 12 inch Jointer, 22 inch Band Saw. Other valuable attachments can be added.

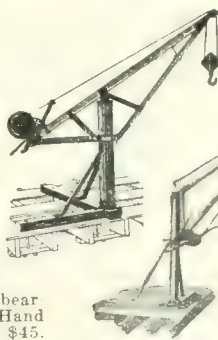


No. 331-P

The Most COMPLETE LINE OF BUILDERS' DERRICKS MADE

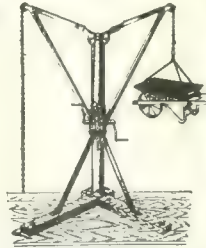
Reinforced Standard 2500 lbs. capacity with geared winch complete \$47.00, or for Hand and Power \$51.00.

PEERLESS STEEL DERRICK full circle swing, self-lubricating bearings \$43, Hand and Power \$45.

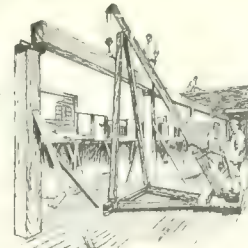


Write
for
Circular
"B"

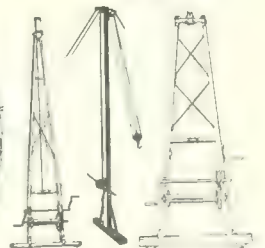
LIGHT, STRONG, STIFF LEG DERRICK with split mast and boom, capacity 1-2-3-4 tons. All steel fittings. Price according to capacity.



DOUBLE BOOM WHEELBARROW DERRICK full circle swing. Sufficient chain for 8 storey building. Price \$68.



"A" FRAME BUILDERS DERRICK 1,800 lbs. capacity. \$48.00; 2,500 lbs. capacity \$51.00.



T. P. SETTER DERRICK. POLE DERRICK. REGULAR SETTER DERRICK.

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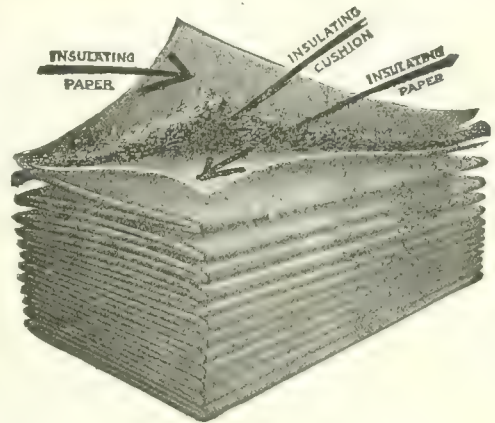


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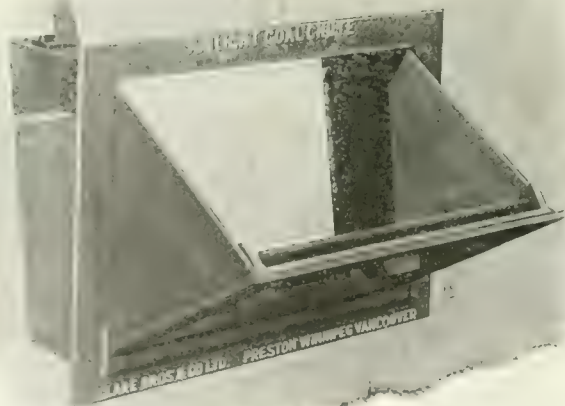


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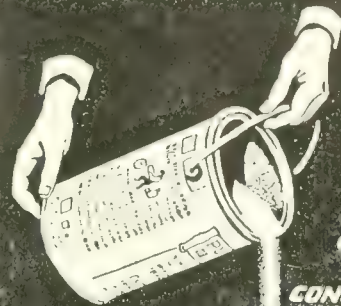
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One man with your machine completed all this in 16 hours, whereas, in the old way, I reckon it would have taken him a couple of weeks.

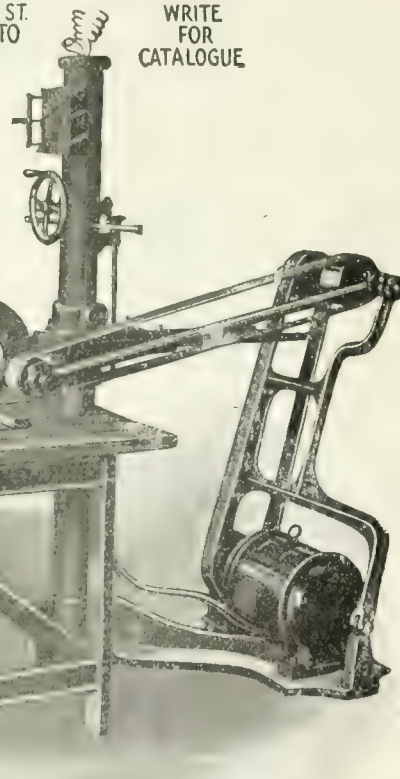
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MONTHLY
PAPER

The Canadian Builder and Carpenter

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Vol. 4

TORONTO, AUGUST, 1914

No. 8

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Cochrane Bridge over Castor River, Monolithic Concrete Construction, span 72 feet. Helmer & Winstanley, Contractors. Magwood & Walker, Engineers.

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The use of Concrete for small highway bridges has become so general that they have been constructed on practically every important road in the Dominion, especially on improved roads.

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A Square Plan Frame and Stucco Residence Erected at Moderate Cost : : :

Builders: Newman Bros., and W. E. Hudson
Architect: T. H. Wiley

*Beautiful home erected at small cost in St. Catharines, Ont.
Trim throughout in chestnut and oak—Many features of design.*

STAFF ARTICLE

IN the suburbs of St. Catharines and, in fact, the whole Niagara district, beautiful homes abound. The one shown in the accompanying illustration, floor plans of which are published herewith, is located just outside the above-mentioned city, and is a fair sample of the class of dwellings being erected in the surrounding country.

Local conditions tend to produce fine-appearing residences. In the first place, land and taxes are not so high as in the bigger centres; consequently bigger lots are purchased and the architect and builder are given full scope to bring out up-to-date and artistic ideas that are impossible in bigger cities, except among the

trance, produce a house that, when its cost is considered, is hard to equal for appearance.

Constructed on Square Plan.

The interior arrangement is excellent. The plans show the house to be 46 ft. 10 in. x 34 ft. 4 in., and constructed on the square plan. The wide hall runs right from the front to the rear of the house, and French windows at the rear lead on to the verandah. The verandah also may be reached from the den.

The Interior Finish.

All the rooms, except the drawing room, are in sand-



Newell Bate's residence in the suburbs of St. Catharines. The stucco is an eggshell white and the woodwork is painted a nut brown.

wealthier classes. Then, too, the extensive grounds are turned into well-kept lawns and flower gardens, and these set the houses off to much better advantage. This is shown in the accompanying photograph.

House Built On a Hill.

This house, owned by Mr. Newell Bate, is built on the side of a hill. It is of frame construction, covered with metal lath and stuccoed, and shows the artistic effects that can be brought out in a house of this construction.

The large number of windows may be noted, and this fact, together with the protruding rafters, large verandah on two sides, and the portico at the front en-

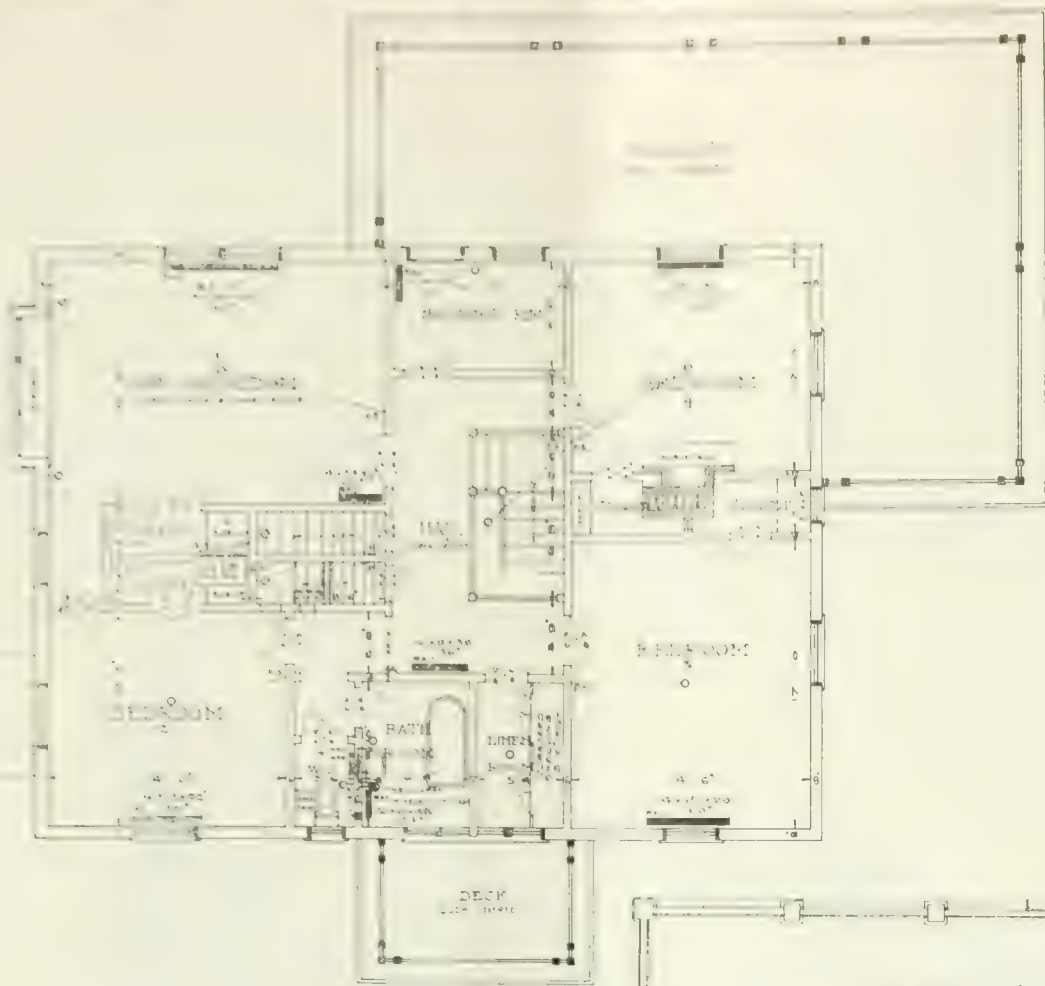
finished chestnut and oak in natural shade, and the drawing room is in white enamel.

Parquet floors are laid throughout, except in the kitchen, which is in terrazo. The bathroom is tiled.

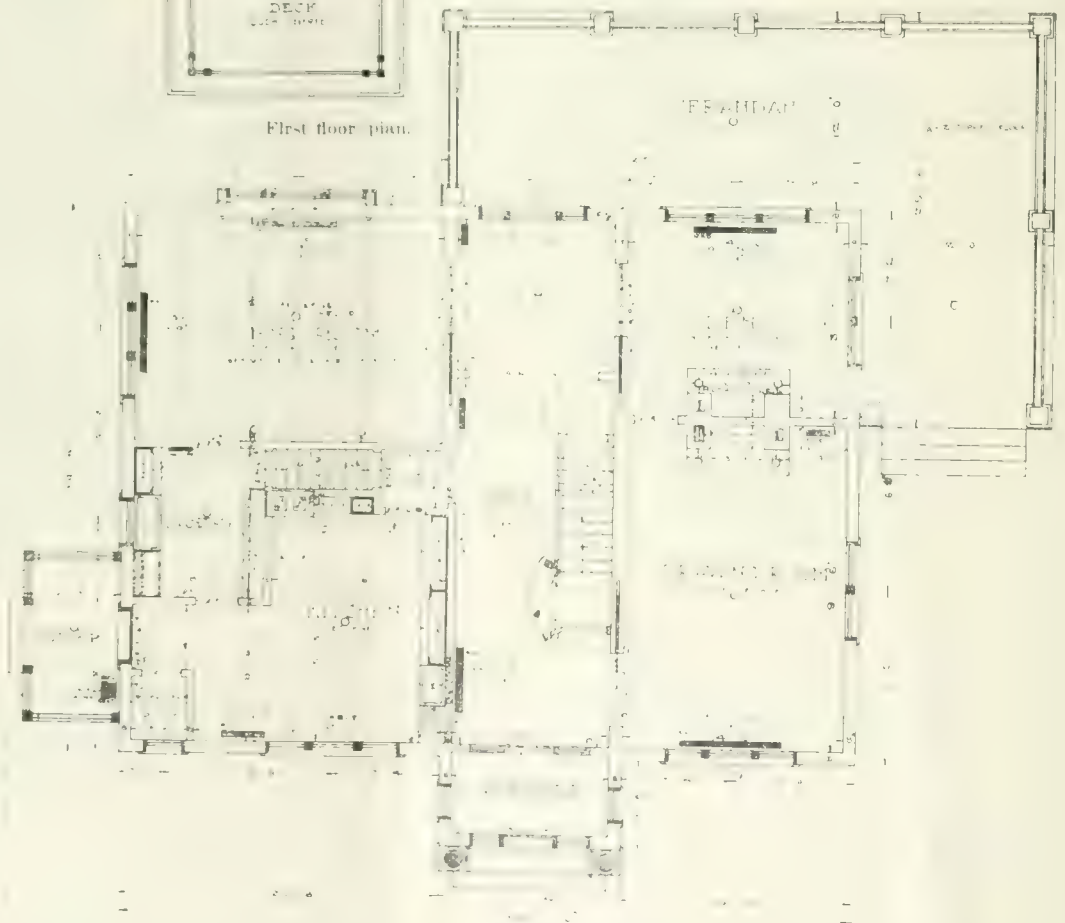
The basement is fitted with stationary laundry tubs, toilet, and built-in cabinets for soiled and clean linen. The floor is of concrete, and the lay-out may be seen from the accompanying plan. A clothes chute runs from the attic to basement.

The Ground Floor.

A feature of this floor is the number of built-in cupboards and bookcases. Every room has one or more. The kitchen and pantry have the usual cupboards, in



First floor plan.



Ground floor plan of Newell Bate's residence.

Shelves in Each Clothes Closet.

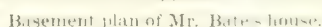
Each bedroom has a roomy clothes closet, about twice the size of those in the ordinary residence. All have shelves built up at one end, thus using up the room near the top that otherwise would go to waste.

Well Laid-out Attic and Basement.

The attic contains storeroom, bathroom, and maid's dormitory.

The plan shows the basement to be laid out to best advantage, and containing everything necessary in an up-to-date home.

The partitions here are of brick. The windows are set high above the grade, allowing for plenty of light and fresh air.



Some Construction Details.

House piers are finished with 4 in. cement caps the full size of the piers.

Fireplace in the den is of 11½ in. x 15 in. Roman tile, buff, with iron spit, and the hearth is of 5 x 5 in. red

Welsh quarries stone. Fireplace in bedroom is of Don Valley pressed brick, and the same for the hearth.

The concrete floors in basement are made of 3 in. bed of well-ranaged cinders, a 3 in. bed of coarse cement concrete, made 6-1 of clean, sharp gravel and Portland cement. It is finished with a 1/2 in. dressing of fine cement concrete made of 3 parts fine screened lake sand and 1 part Portland cement.

Wood Lath and Plaster.

The house is finished with plaster on wood lath. All the exterior walls are lathed horizontally to floor line, and all external angles have metallic corners. Two coats of plaster were applied all the way through, except in the bathroom and kitchen, where three-coat work was done. The plaster in the den, dining room, bathrooms, toilet, and halls is finished in cement bastard stucco.

Besides having electric light, pipes have been laid for natural gas, either for lighting or domestic purposes.

Carpentry Details.

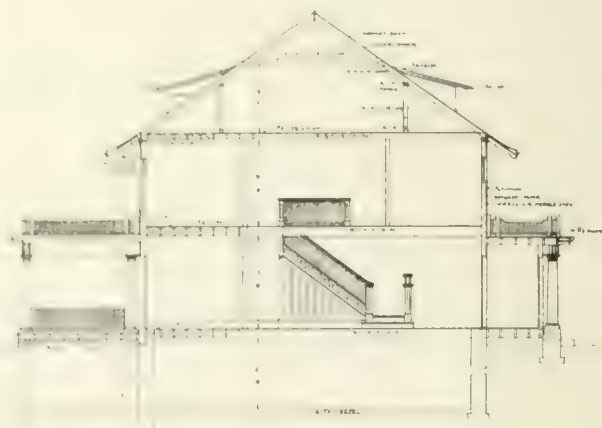
The verandah is in white pine, except the floors and columns, which are of cypress. The ceiling is Georgia pine.

The stairs are constructed almost entirely of chestnut, the hand rail and newels being plain red oak. The treads also are of oak.

Roof with double thickness of 2 in. plates the full width on top, single on bottom, for all bearing partitions, single top plates for all others.

Roof Construction.

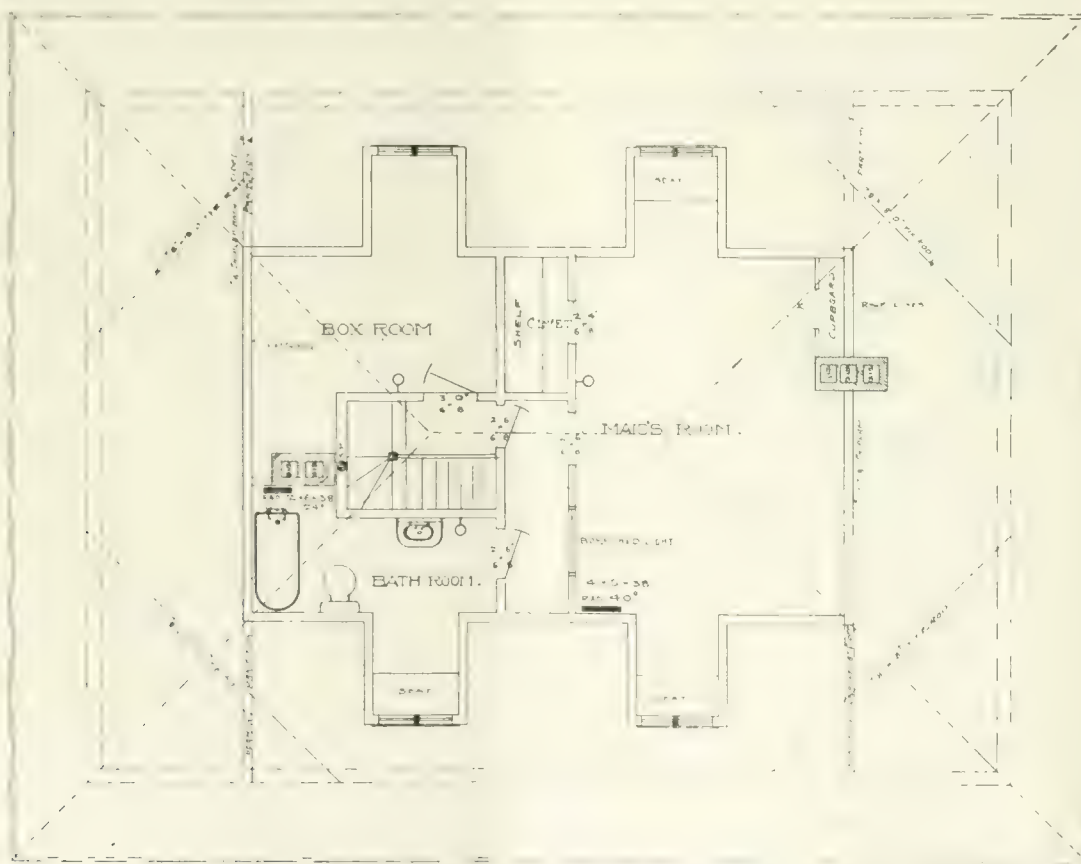
The roof is constructed with 2 x 6 in. rafters and



Sectional details.

2 x 8 in. valleys, and covered with 1 in. d-l-s hemlock sheeting. The shingles are XXX B. C. red cedar, laid 5 in. to the weather.

Exterior walls on the ground and first floor have 2



Attic plan.

The joists on the ground and first floors are 2 x 10 in., 16 in. on centres. Plates are 2 in. stock and full width of studs.

Cellar stairs are 13 1/4 in. treads, 2 in. stringers, and 7/8 in. mould and beads in white pine 3 1/2 in. wide.

Interior partitions are 2 x 4 in. and 2 x 3 in. sized

x 5 in. studding, 16 in. on centres, sheathed with 7/8 x 5 1/2 in. hemlock shiplap, and covered with building paper.

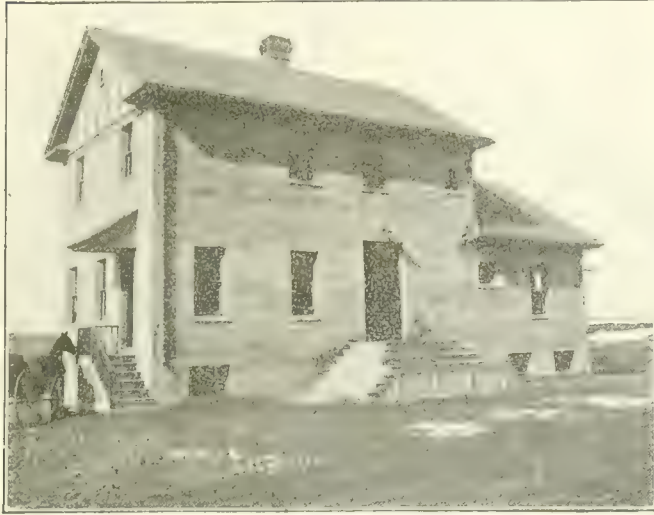
The dormers and porch are shingled the same as the main roof.

The verandah is built with 2 x 8 in. floor joists, 18

in. centres, bridged, and covered with $1\frac{1}{8} \times 2\frac{1}{2}$ in. cypress. The plate is built hollow with moulded architrave and brackets, 2×4 in. ceiling joists, and $\frac{3}{8} \times 2\frac{1}{2}$ in. Georgia pine ceiling.

Interior Trim.

On the ground floor, the base in the den, hall, drawing room, pantry, dining room, kitchen, and vestibule



Emergency hospital of the Dominion Iron & Steel Co., Sydney, N. S., the style of which might be adopted in small towns.

is 10 in. moulded, and the base blocks are $1\frac{3}{8} \times 11$ in. long.

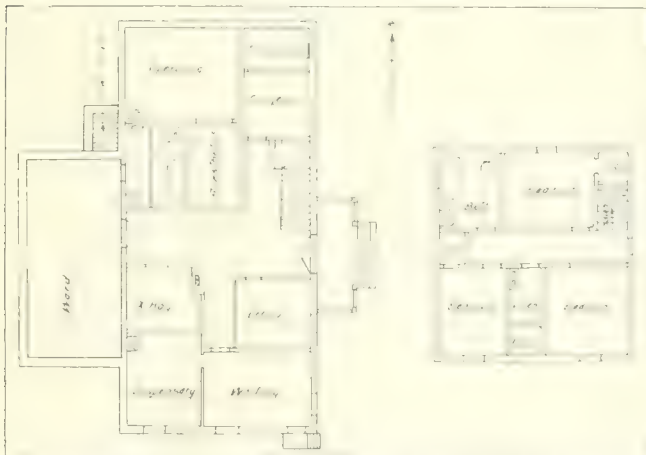
All the base on the first floor is 8 in. moulded and 10 in. long.

The window and door side casings are 5 in. moulded. Window and door heads, 6 in. moulded.



Emergency Hospital of Dominion Iron and Steel Co.

The Dominion Iron & Steel Co., Sydney, C.B., recently completed at Sydney an emergency hospital. The building itself presents a very attractive appear-



Plan of hospital of Dominion Iron & Steel Co., Sydney, N. S. This hospital is of a size which could be used in towns. The building is 24×50 ft. over all.

ance, being constructed of Sydney pressed brick with red tile roof.

The main building contains on the ground floor, operating room, sterilizing room, anaesthetic room, dressing

room for minor injuries with waiting room adjoining, an office and a diet kitchen equipped with electric appliances; the ward forms a wing at the back of the building and has a capacity of five beds. Adjacent to the ward is a lavatory with tile floor and white enamel fittings throughout. Upstairs there are four bedrooms for nurses, bathroom, linen closets, and dressing room for the surgeons.

The basement is well lighted and drained and contains the hot water heating furnace, fire hose connections, X-ray room and hot water supply fixtures, everything most conveniently arranged for use. The floors of the entire building are of hardwood and all the woodwork in the living portion is finished in natural wood while white enamel is used throughout the surgical departments.

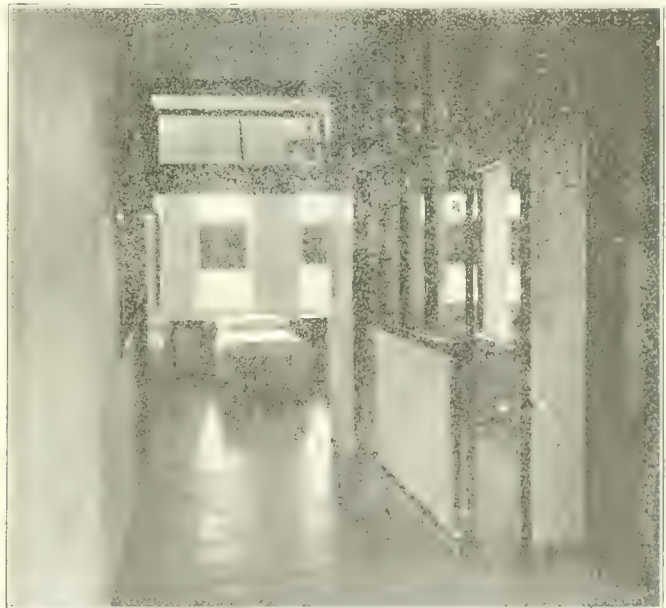
The equipment of the sterilizing, dressing, anaesthetic and operating rooms is of the very latest type of its class. The whole equipment is compact, convenient and suited for the purposes intended.

The "Club House," which has been used as an emergency hospital for some time, is being remodeled and re-decorated throughout for the reception of convalescent patients from the new emergency hospital as they recover sufficiently to be transferred. When this work is completed it will enable the company to concentrate all the hospital treatment on the plant.



Some Changes That Might be Made in a House Constructed on the Square Plan

H. M. Battle's house at Thorold, Ont., plans of which are published on the following page, is built of Bartonville pressed brick on a stone foundation. It is laid



Interior view, ground floor of emergency hospital of Dominion Iron & Steel Co., Sydney, N.S.

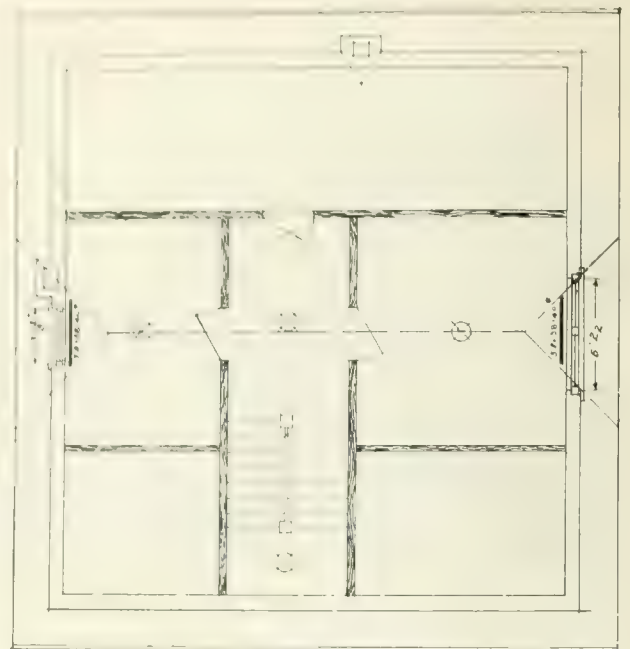
out on the square plan, and occupies a space 29 ft. $2\frac{3}{4}$ in. \times 28 ft. 2 in.

The plan is excellent, but it might have been improved upon by dividing the living room in two and using one-half for a dining room, and use the room marked "dining room" on the plan, as a parlor. Thus, one would not have to pass through the hall and around the stairs in order to get from the kitchen to

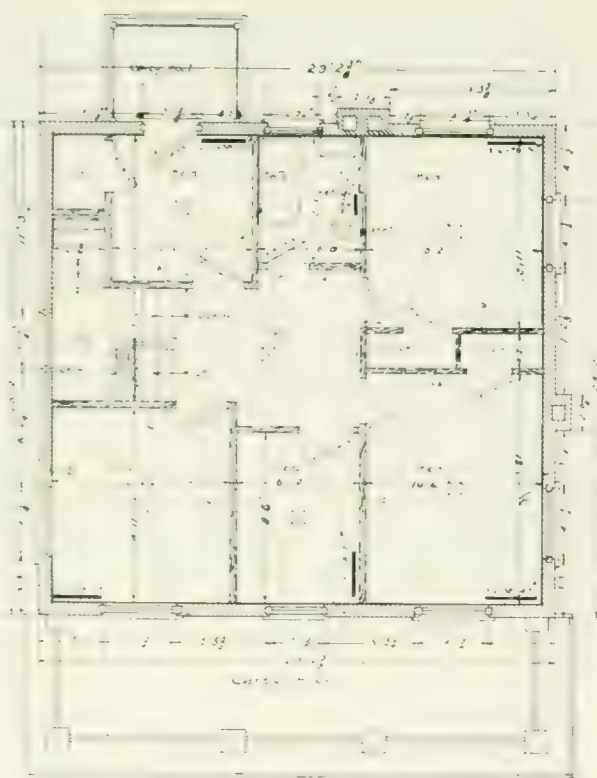
Floor Plans of H. M. Battle's Residence, Thorold, Ont.



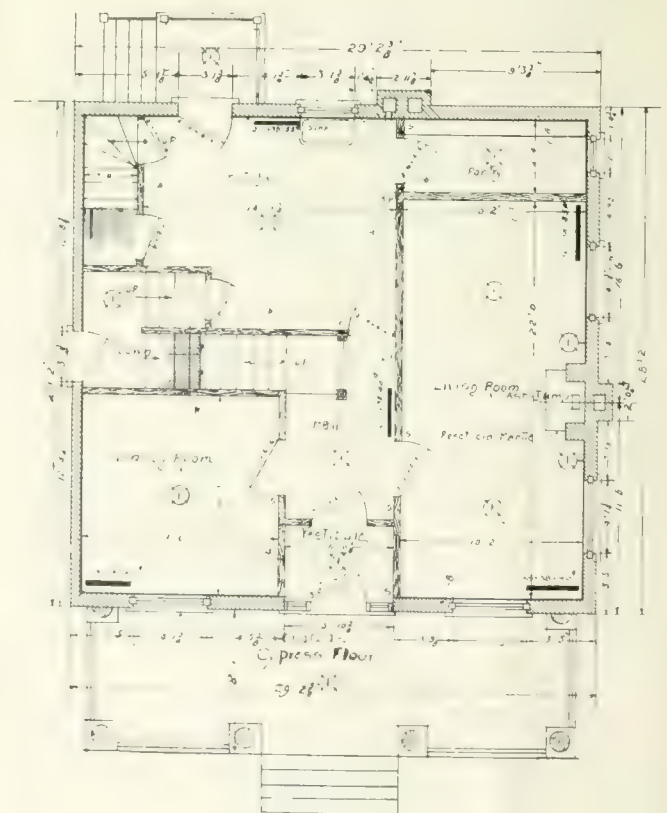
BASEMENT.



ATTIC.



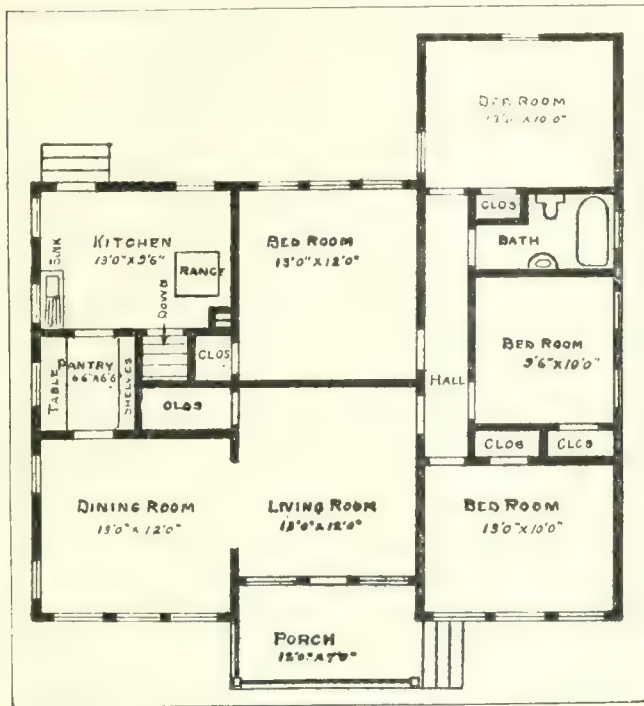
FIRST FLOOR.



GROUND FLOOR.

the dining room. Of course, if the plan were changed in this manner, it would be necessary to cut a door through the wall of what would then be the dining room to afford access to the kitchen.

Another suggestion which might be offered would be leave out the back stairway leading from the kitchen,



Floor plans of a well-laid out and compact cottage.

build the pantry in its place, and thus give more room for the dining room and living room.

These are but suggestions, and must be taken for what they are worth.

Some Construction Details.

The joists on the first floor are 2 x 10 in., and on the

second and third floors 2 in. x 8 in. They are all hemlock and set crowning side up and doubled under partitions. They are bridged 10 in. on centres, and there is one row of bridging between each partition. All bridging is 1 in. x 3 in.

The roof is formed with 2 in. x 6 in. rafters and cellar ties, 2 in. x 6 in. plates, and the whole covered with $\frac{7}{8}$ in. hemlock sheeting and a layer of building paper.

The trim is of ash, and hardwood floors of $\frac{7}{8}$ in. maple have been laid throughout.

All box windows have been used, except in the basement, where the casement variety has been installed.

The stairs have hardwood treads and square balusters, three to a tread.

The verandah is constructed of 6 in. x 8 in. built-up beam, 2 in. x 8 in. joints, and $\frac{7}{8}$ in. square-edged cypress flooring.

The furnace is a warm-air one, and electricity supplies the lighting power.

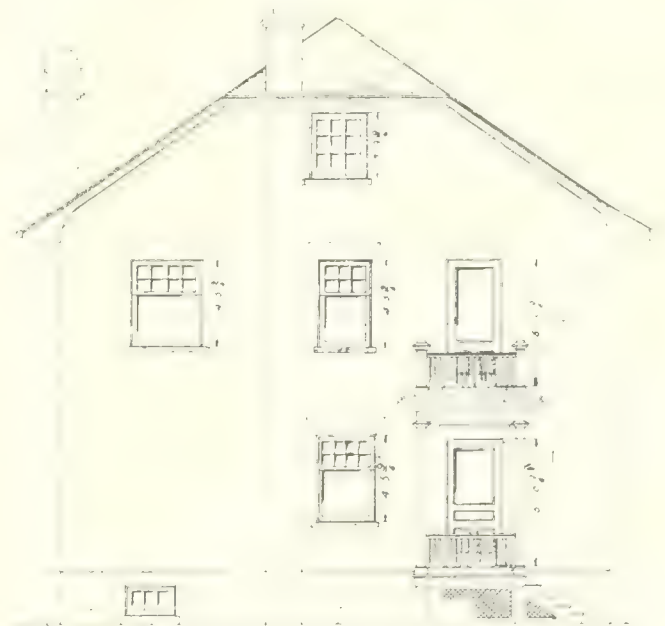
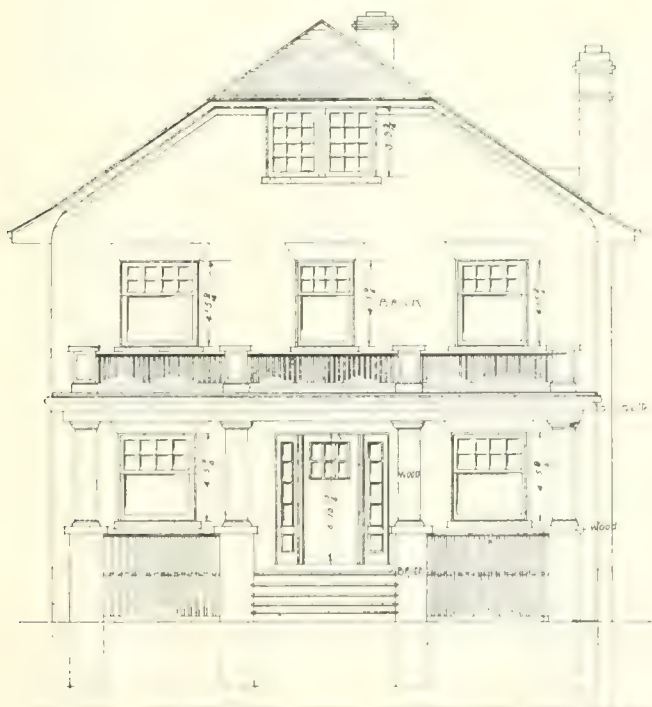


A Well-arranged Seven-room Cottage

The accompanying sketch shows a well-planned cottage 40 ft. x 40 ft., containing seven rooms, all of fairly good size. Entering the living-room from a good-sized porch, a good view of the dining-room is given through a large arch, which can be curtained off, or separated by rolling doors. A spacious closet is entered at the back of the living-room. The kitchen, which is of good size, is connected with the dining-room by a pantry in which a table is placed under the window, and on the opposite side are shelves, enclosed by doors.

Access to the basement, which is the full size of the house, is had from the kitchen. The bedrooms and bathroom, are all entered from a hall, into which one goes from the living-room. Each bedroom has a good-sized closet.

The hall is lighted with transoms over the bedroom windows, or by the doors, the upper half of which are stained glass. If one wishes to use the up-



Front and rear elevations of H. M. Battle's residence.

per part, a stair can be built in where the closet is off the living room.

The roof of cottage form projects out around the house, for quite a distance, enough to cover the porch.

The heating system may be hot air, steam or hot water. — W. D. A., in Family Herald and Weekly Star.

Frame House Built at a Cost of \$1,800

Here will be published plans of a frame house that is ideal for towns and cities where there are no restrictions against building a house of this construction. The house is located in Welland, Ont., and was built by John Thew, for his own use, from plans drawn by Architect D. E. Forbes.

The lot on which the dwelling is built is 25 ft. frontage, and the house itself is 22 ft. x 26 ft. on one side and 36 ft. 7½ in. on the side where the kitchen has been added.

Construction Details.

Mr. Thew's house is balloon frame construction on concrete foundation to the grade. The studs are 16 in. on centres, the face of the studs is sheathed with hemlock boards, and the siding put on in front of this.

The trim is Georgia pine, with Georgia pine doors and hardwood floors throughout.

The chimney is of tapestry brick, and lined with fire kiln brick. This was done for the reason that natural gas is used exclusively in Welland, and this variety is much harder on chimneys and pipes than

the manufactured variety. However, the house is not heated by natural gas, but the fireplace in the living room uses gas. A warm air furnace is installed in the basement.

A Wide Verandah.

The verandah is the full width of the house, and the columns are straight and about 7 in. square. The main roof is shingled and comes over the verandah.

Pantry in Advantageous Position.

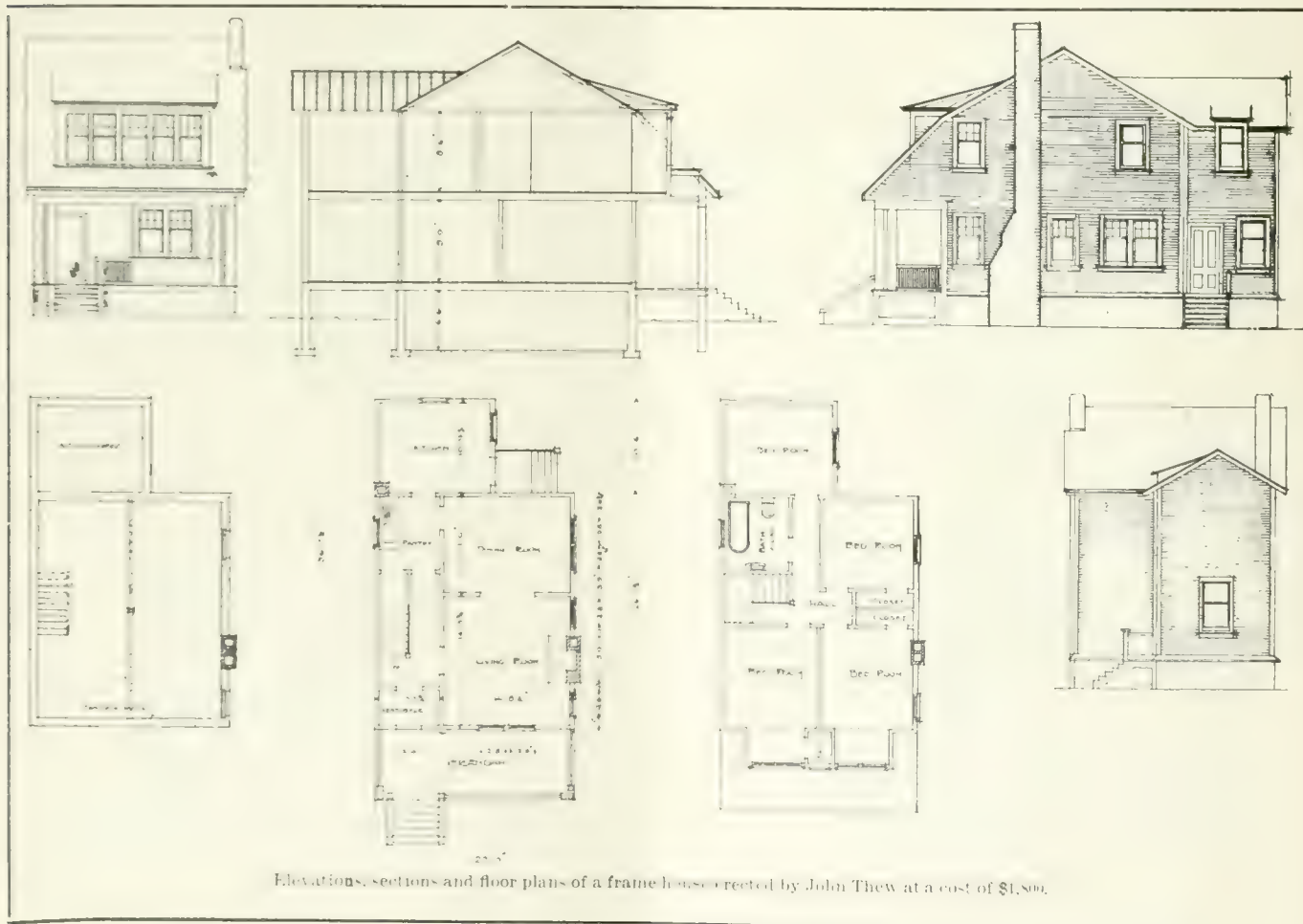
A feature of an altogether excellent lay-out is the location of the pantry at the rear of the main hall and immediately in front of the kitchen. This allows of easy access to both dining room and kitchen through swinging doors.

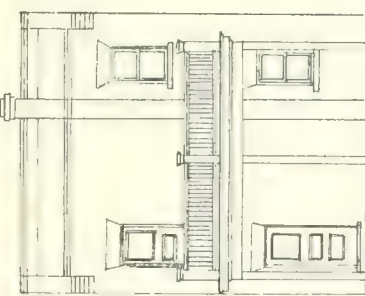
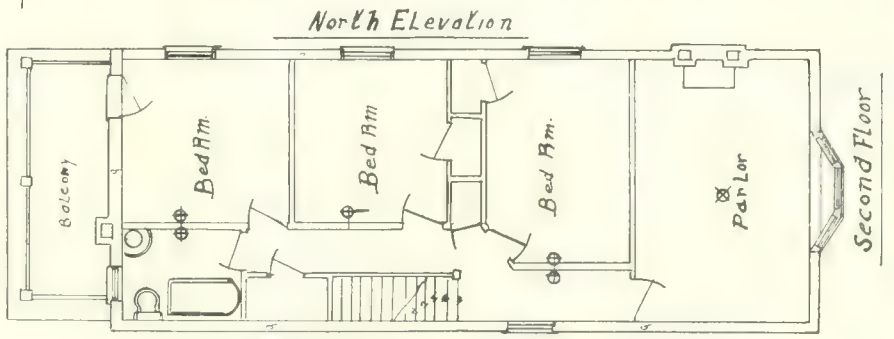
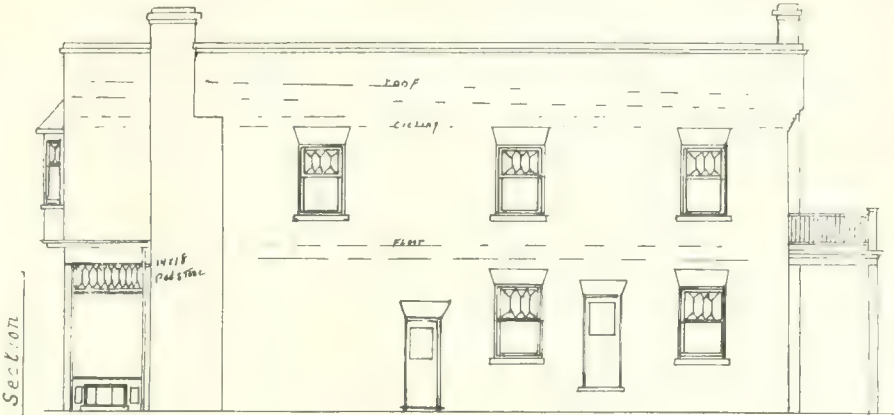
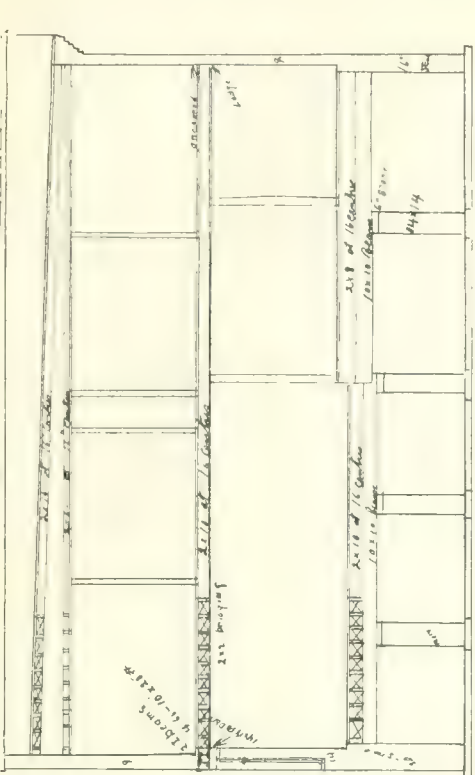
The total cost of the house, exclusive of land, was \$1,800.

Well Laid Out Store with Apartments Overhead

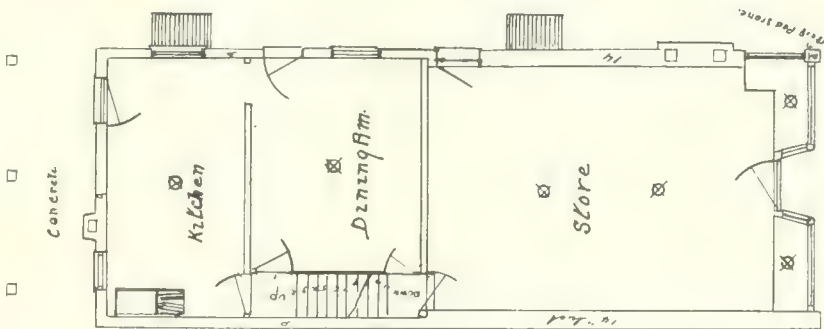
On the adjoining page are shown floor plans, elevations, and sectional details of a well laid-out store, with living apartments above.

There are many points about this lay-out to commend it, but a suggestion is offered that it might have been better were the stairs leading to the living apartments placed on the opposite side of the building. Were this done, the occupants could enter by the side entrance

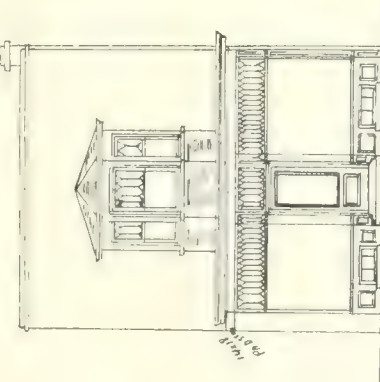




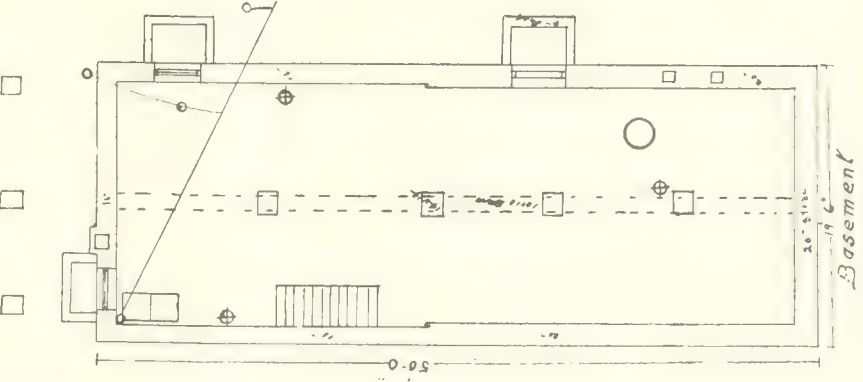
Rear Elevation



First Floor



Front Elevation



Basement

Floor plans, elevations and sectional details of a well laid-out store, with apartments overhead.

and not be compelled to walk through the store. Of course, the lay-out as shown is excellent if the store tenant occupies the rooms above, but when someone else leases the apartments it would save inconvenience by having the stairs near the side entrance.

Arrangement of Closets.

A feature that should be specially noted is the arrangement of the clothes closets in the first and second bedrooms and the linen closet off the hall and in between these two rooms.

Influence of Glass on the Appearance of a Modern Dwelling

A good quality of glass greatly improves the appearance of a house and adds to the selling value—How to tell good glass—Increased use of plate glass—Some notes on art glass.

STAFF ARTICLE

HOW many builders give any thought to the grade of window glass they intend to put into a house?

A study of the grades of glass will reveal the fact that the careful selection of the glass is as essential as a careful consideration of the trim which will give the best finish to a house.

Builders Should Specify Grade of Glass.

No builder when needing a saw would enter a hardware store and simply say, "I want a saw." He would name some particular brand. The same with paint.



Art glass window in residence of Dr. Chas. O'Reilly, Toronto. It is located at a large landing on the main stairway and the effect is excellent. The design embraces both Dr. O'Reilly's and his wife's family coat-of-arms.

When buying glass, however, this is often what happens: A builder just walks into a store and says: "I want so many lights of glass of a certain size."

The probable reason for this is that few builders

know there is a wide difference in the grades of ordinary sheet glass, and for this reason everyone should familiarize himself as to what constitutes a good grade. He should also familiarize himself with the different brands on the market in order that he may determine what will best suit a particular job.

How to Tell Good Glass.

Good sheet glass should be of a uniform thickness and as free from blue stains (due to the presence of sulphur in the chemicals used in manufacturing glass) as possible. All sheet glass will contain some air bubbles, but in the better qualities these are confined to very small ones, because in cutting the inferior parts are cut out and put to one side to be sold for cheaper grades.

Plate Glass Being Used More.

Heretofore plate glass has been used mainly in store fronts and very little in dwellings. It is only of late, however, that its value to private residences has gained any recognition. However, whenever it is used in houses, it is, as a rule, only in the more expensive ones.

Of course, plate glass costs more than good sheet glass, but the difference in price is not very great, and it pays to put in the plate glass at the front of the house. Twenty-five or thirty dollars extra spent on the front of the house will add \$50 or \$75 to the selling value, because of the improved appearance.

Automobile Firm's Experience.

To show that it pays to buy good glass, here is an illustration, which applies equally to the case of the builder: One would not think that it made a great deal of difference what kind of glass went into a windshield of an automobile. A certain firm that manufactures a low-priced car thought to cheapen the production cost by putting in a cheaper grade of glass in the windshield. They had been using plate, but experimented with a fairly good grade of sheet glass. The result was entirely unsatisfactory, and in a very short time the idea was discarded and a return made to the high quality plate glass.

Opportunities Offered by Leaded Glass.

Leaded art glass offers great opportunities for adding attractiveness to a house. There are many places where it can be used to advantage—in the front door and in the small top lights of windows, but mostly and perhaps with best effect, at the landing on a stairway. Any design may be chosen; there are hundreds of them. A favorite with many people is to select the coat-of-arms of the family, if they have one.

Cheap Art Glass Spoils Effect.

The builder must here be warned not to purchase cheap art glass. To do this means that the whole effect will be spoiled. The writer knows of a lady who built a \$10,000 house, and put in art glass to the value of \$135. A friend of hers built a house on the same plan, but made the mistake of putting in the same amount of art glass, but costing somewhere around \$30. To see the two houses together, there is absolutely no comparison. Although each spent practically the same amount in the construction of the house, by trying to save a few dollars on the glass put in, the whole effect was spoiled.

Builders should, therefore, be careful to use or to recommend the better grades of glass.

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Moderate Priced Frame House Erected at Welland, Ont.

In the floor plans of the frame house published herewith are offered some good suggestions. This dwell-

ing was erected in Welland, Ont., by C. Hoph from his own plans. It is of balloon frame construction on concrete foundation to grade, and with three rows of concrete blocks above the grade.

Although the plan shows a bedroom on the first floor, the partition was not put in, and the one big room is used as a dining room.

The basement floor is of concrete, and the walls are waterproofed to above the grade.

Warm air heating is used, and, besides having electric light, the house is piped for natural gas, either for lighting or domestic purposes.

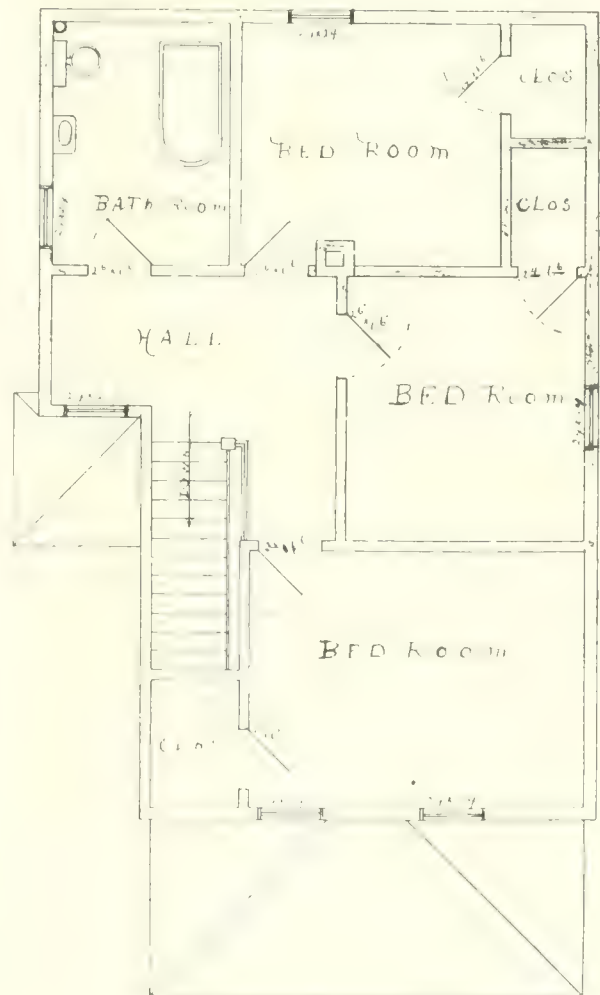
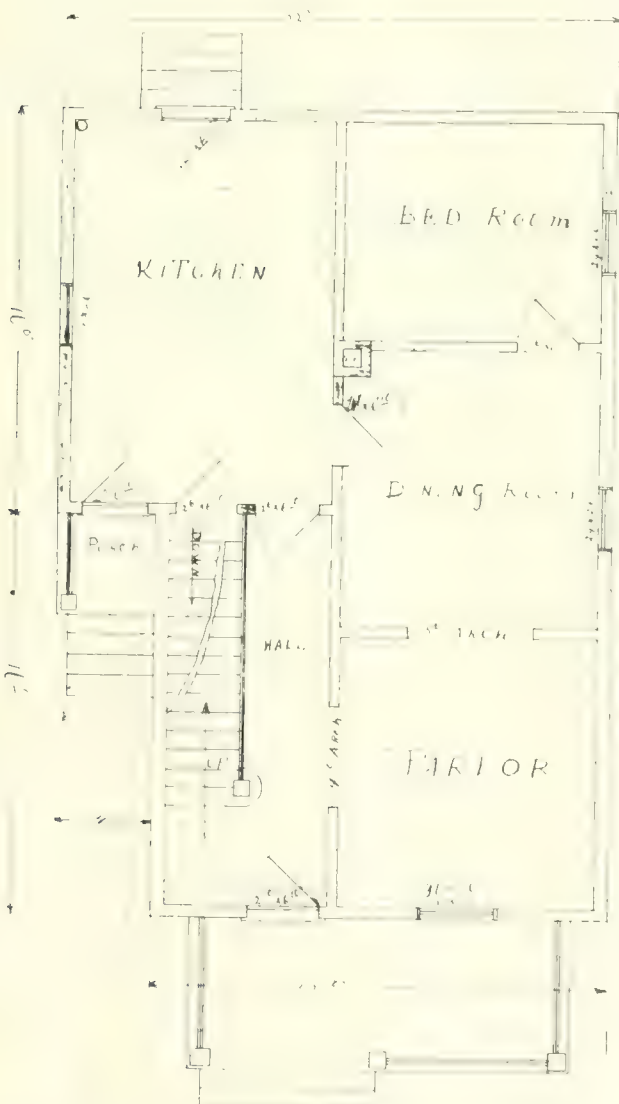
All chimneys are flue-lined.

The trim downstairs is of black ash and Georgia pine is used on the first floor.

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It is a whole lot easier to find fault with a foreman than it is to be one.

The right kind of a job to have is one where good work and attention are required, for they help a man get the right kind of habits.



Floor plans of C. Hoph's house in Welland. The dimensions of the various rooms are as follows: Verandah, 5'6" x 18'; parlor, 10' x 10'6"; dining room, 13' x 10'; kitchen, 10' x 15'6"; front bedroom, 13' x 10'; middle bedroom, 10' x 10'6"; rear bedroom, 9'6" x 10'; bathroom, 9'6" x 7'.

Points a Contractor Should Remember in Furnace Installation

How many owners realize the fire hazard of a furnace (improperly installed)? How many are told by their contractor or architect? Every man on the job ought to be sufficiently interested in the new house to build it carefully as possible, but, unfortunately, many are not. Furnaces are frequently installed with no thought of fire-prevention, and the owner finds later, to his cost, that he has been harboring a fire promoting apparatus, ready to "start something" at the first opportunity. The furnace should be surrounded by a zone of actual (not approximate) fire protection. In a frame building, joists above the furnace should be covered with two or three layers of heavy asbestos paper, which should in turn be covered by a layer of tin or galvanized iron, extending well out beyond the area of the furnace, as in Fig. 1.

Another source of many fires is the smoke pipe extending from the furnace to the chimney flue. Often it is merely hung to the under side of the joists with pieces of wire. Then when the fire is forced on a cold day the hot smoke pipe radiates its excessive heat to

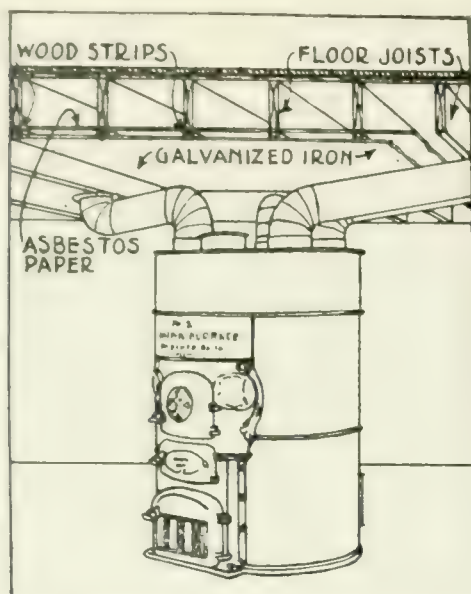


Fig. 1. Fireproofing a wooden floor over a partition.

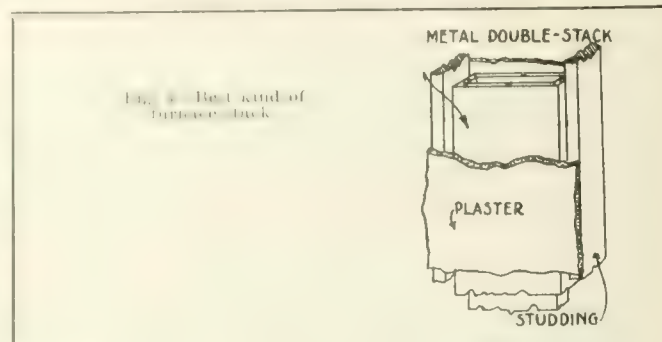
the wooden floor above and a bad fire is the consequence. All this might have been prevented by a little timely advice from the architects or contractors, who, more skilled in matters of this kind, are entirely familiar with the proper methods of fire protection around a furnace. They should inform their clients of the necessity of fire protection, not only above the furnace, but above the smoke pipe as well.

When a fireproof floor, such as is built in a fireproof house, is extended over the furnace, no fire protection is needed, of course. An example of this is shown in Fig. 2. Though the tin or iron protection of a wooden floor can only approximate the ideal protection of actual fireproof construction, it is, at least, a step in the right direction, and, when carefully applied, tin or iron over a furnace will go a long way toward fire prevention.

Hot-air Pipes Spread Fire.

Next to the furnace itself, the greatest way to spread fire is by means of the hot-air pipes extending up through the partitions. Sometimes there is a tendency

on the part of the owner to put in a cheap furnace installation. When the bids come in it is a great temptation to accept a bid which the architect himself knows to be so low it would be impossible to do a good job. In this way workmanship and material is skinned



down to the last notch and single piping is installed, hastily thrown together, regardless of fire risk.

Single Piping Dangerous.

Single piping is dangerous in a frame house because an over-heated furnace sometimes sends hot-air up to the stacks of much greater temperature than is safe. The dry timbers of partitions begin to char until a smouldering fire is started, which may quickly break into flame. Though first cost is greater, double piping should always be recommended to an owner, not only on account of the fire protection double piping offers,

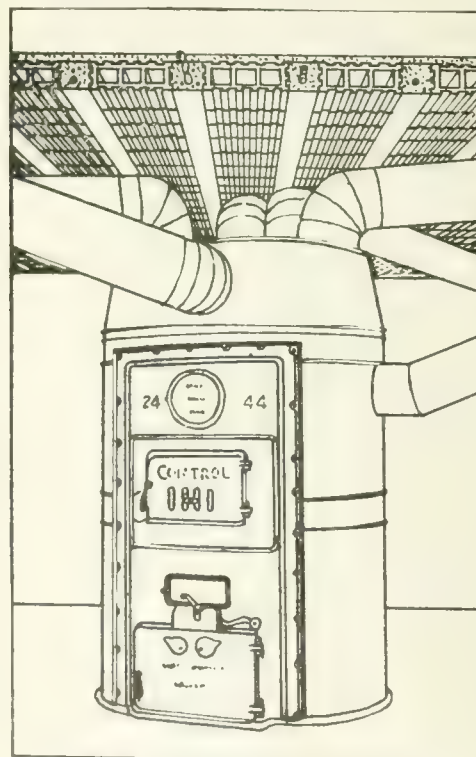


Fig. 2. Fireproof floor over a furnace.

but because of the great amount of heat wasted by single pipes and consequent increase in fuel consumption. See Fig. 3.

Air Space in Partitions Should be Closed.

Frame partitions have always offered great opportunities toward the spread of fire, once it is started. A strong draft is almost always created, quickly com-

municating through all the air spaces in walls and floors, so that in a short time the building becomes a mass of flames. Fire risk is reduced by cutting off

the air space in partitions at each floor, by causing the floor boards to be laid entirely across the space. All careful contractors do this of their own accord.

Installation of Furnaces—Some Important Points That the Builder Should Consider

By
David Millar, Toronto

Opinions of a competent heating engineer—How pipes should be installed—Importance of correct location of furnace—Proper air supply—Construction of chimney.

TO me it seems a shame that builders, particularly the speculative kind, do not give more consideration to the class of furnace they put in their houses and to the way the heating systems are installed. It seems that the lower the price the better the builder is pleased, and no thought seems to be given to the persons who will ultimately live in the house. Why, I have figured on many jobs, and time and time again have had builders say to me: "Of course you know, Mr. Millar, if I were building this house for myself, I would willingly pay the difference in cost and have a first class installation." Surely this shows the value of having a heating system installed properly, and were it not for the competition in the sale of houses, I do not think there would be any room for the many complaints we hear about houses not being properly heated.

The Main Point the Builder Should Consider

There are many points the builder and contractor should consider when it comes the time to put in the furnace, but the first main one is selecting the proper sized furnace. It is always better to put in a furnace that is one size too large than to have one that will barely do the work required of it. There is too much of a tendency to put in a small one, in order to cut the price down. A small furnace that will do the work means more firing, more attention and more frequent repairs. With a furnace of the right size, there is less wear and tear and more economy in regard to fuel.

How the Pipes Should be Installed

The next big point to be considered is the roughing in or stacking of warm air pipes. The pipes should be of proper dimensions and properly put together, with proper cleat joints, soldered, and all joints covered with asbestos. The builder should see that the proper sized pipes are conducted to the upper rooms, and provisions should be made for the furnace man to get the proper sized pipes in. The great difficulty is that when the heating engineer comes to install the pipes, too often he finds it impossible to carry out the work as he would wish and as it ought to be done, because the builder has not left the necessary space. The result is that he has to make the best of conditions as he finds them. This means that he has to cut up a lot of work that already is in place and, as a result, there is more work for the contractor.

In this matter, too, the architects are just about as bad as the builder. They leave no provision for the heating system. If the heating engineer is called in before the building is too far advanced, better results will accrue, for he can arrange for the piping before things have gone too far.

Proper Location of Furnace Essential

Provision should be made in all cases for the furnace-

room to be located so that the furnace will get a fair chance to do its proper work. In furnace installation you have to have an equal distribution of the pipes, and unless this is done, the result will not be at all satisfactory. This further brings out the necessity of consulting a heating engineer when plans are being drawn up, in order that he may offer his advice as to the best situation.

The Proper Supply of Air

Another very important point is the question of the proper supply of air. In nine cases out of ten, the air supply is about one-half what it should be. The area in square inches of the air supply to a furnace, when taken from the house, should be equal to the area in square inches of all the warm-air pipes on the furnace. This area should be carried from the receiving point to the entrance of the furnace, with full capacity, and not contracted at any point.

Watching Construction of the Chimney

Very little attention is given by the average builder to the flue or chimney construction. This is really the most important point of any heating apparatus. The furnace flue should be independent of any other, and no other flue connection should connect with the furnace flue. If there is another connection the draft will be checked and the results given will not be so good. For the average furnace the flue should not be less than 8x12 inches, smoothed inside, carried straight, and be fully two feet above the highest point in the roof. This is very important, for any man can see if the roof is a peaked one and the top of the chimney is not higher than the highest point on the peak, the wind will sweep across, will hit the level that is higher than the chimney and be blown back down the chimney again.

Heating Systems Should be Inspected

In my opinion, the time is coming when every heating system will be inspected, the same as plumbing and wiring is to-day. When this does come the builder will have to see that the right furnace is put in and that it is properly installed.

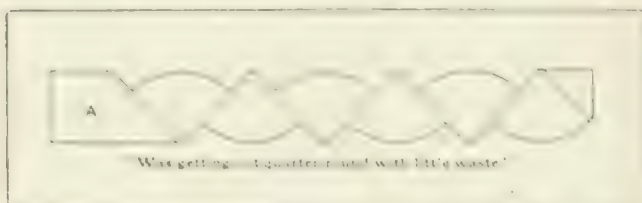
I would advise all builders who want to turn out the best work to place their contracts in the hands of a competent heating engineer—one who understands the work, not only practically, but scientifically, one who is fully up with the requirements of a proper installation.

It always makes a hit with an owner when a contractor shows interest in work not in the contract, and no greater help can be given to an owner than to have his contractor alive to all the latest and best methods of fire prevention.

Making Quarter-Round

I recently passed through a little home-made plant where the proprietor was getting out quarter-rounds with about as little waste as seems humanly possible—good quarter-rounds, too.

He ran a board the full width of machine, with knives on top and bottom heads substantially alike, getting out a piece as shown in sketch. This he ripped, with a fine saw, as indicated by the dotted lines, thus mak-



ing it all into quarter-round except the strip A and the little three-cornered strip on the other edge. The strip A was of the right width for a larger mold, and was left plain in order to steady the piece while making the last saw cut. This would not be necessary if one cared to make more elaborate guides than he had for the ripping; but it caused no waste or extra cost, except, possibly, a little extra handling.—Hobo, in The Wood-Worker.

Short-cut Method

of Sandpapering Stair and Verandah Balusters

They say that when you have a good thing to pass it along. I have a stunt that I think is a good one, and which will save a great deal of time and trouble.

My balusters for stairways and verandahs come from the mill in the rough. Instead of sandpapering

these by hand, I have made a drum covered with sandpaper to fasten on to the shaft of the woodworker, and trim the balusters over this.

The drum is simply a round piece of wood, about ten inches in diameter, with a hole, the size of the iron shafting, in the centre. A slot half an inch wide and a quarter of an inch deep is chiseled out on the outside edge of the drum, and the sandpaper is made to fit the drum tight, and is fastened into this slot by means of a brass plate and screws.—E. A. F.

Correct Way to Glaze Window Glass

Although few builders know it, there is a right and a wrong way to glaze window glass. If the edge of a sheet of glass is examined closely, it will be noticed that the whole sheet curves slightly. This curve is caused in the process of manufacture.

In placing the sheet in the frame, the curved side should be placed to the outside owing to the fact that in manufacturing the glass the hollow side is the last side to the fire, and, necessarily, gets the greatest number of burns, fire marks, and other blemishes. Therefore, this side should be placed to the inside in order that the outside appearance may be improved.

Hardwood-Fibre Plaster

Hardwood-fibre plaster is manufactured to a small extent in New York and Philadelphia by mixing cement and wood chips. Bolts of wood 12 to 24 in. in length are put in lathes and fine fibres are chipped off with cutting tools. The mixture is sold in dry form, and requires only the addition of water to make it ready for use as a wall plaster.



Handsome residence of Mr. H. L. Kerr, at 352 Roxborough St. East, Toronto.

Questions with Answers of Interest to Builders and Carpenters

As this is the busy season and some of the questions were urgent, answers are given with the questions in this issue—A number of others asking for the names of dealers in certain supplies were answered by mail so that readers might not be delayed in proceeding with their work.

ANSWERS ARE BY SUBSCRIBERS

THIS is the busy season of the builder, and the carpenter. Many questions have been asked and replies are given herewith. During the month a number of letters have been received asking for dealers' names, etc. These letters were answered direct by mail. Should any reader desire any information as to where any product may be secured, a letter will receive a prompt reply.

41. Cleaning Files.—What is a good method for keeping files clean so that I may secure best service?—Carpenter.

42. Number of Bricks in a Wall.—Recently a contract for the construction of a brick building was tendered on by Builders A and B. The contract was awarded to B, whose tender was considerably lower than A's. On an examination of A's tender, it was found that he had figured a great many more brick than was necessary for the building. Will a reader who knows please supply through The Canadian Builder a list of brick per square yard for different thicknesses of walls?—A.

43. Rat-tail File.—One of the boys asked me to buy him a rat-tail file. Is there any such thing?—Sensitive Apprentice.

44. Lath on Sheathing of Frame House.—Will you kindly answer the following question to settle an argument: A man builds a frame house. He puts the finishing siding on the outside studding and then sheets it on the inside of the house. He then puts his plaster laths on the sheathing. Will the plaster key itself between the laths sufficiently to make it firm, or will it keep falling off, because it is unable to get down behind the laths?—Constant Reader.

45. Reinforcing Concrete Walls.—I am building a concrete house with a cobblestone face up to the second joist. The foundation walls are 10 in. thick, and the others will be 9 in. thick. The house is 18 ft. by 28 ft. Do you think it is necessary to have the cobblestone walls reinforced?—W. E. Hardy.

46. Filler for Georgian Pine.—I have a lot of Georgia pine trimming in my house which I wish to fill and varnish. I would be obliged if you could give me details for making a filler, as I do not know and cannot get to know.—N. G. D.

39. Estimating Nails Required.

The following gives an idea of the number of nails required for various work, as well as the number and length of cut nails to the pound:

Table for Estimating Quantity of Nails.

Work or Material.	Size of nail.	Lbs. required.
1,000 shingles	4d	5
1,000 laths	3d	7
1,000 sq. ft. beveled siding	6d	18
1,000 sq. ft. sheathing	8d	20
1,000 sq. ft. sheathing	10d	25
1,000 sq. ft. flooring	8d	30

1,000 sq. ft. flooring	10d	40
1,000 sq. ft. studding	10d	15
1,000 sq. ft. studding	20d	5
1,000 sq. ft. furring, 1 x 2 in.	10d	10
1,000 sq. ft. fshd. flooring, 1/2 in.	8d to 10d fin.	20
1,000 sq. ft. fshd. flooring, 1 1/8 in.	10d fin.	30

Length and Number of Cut Nails Per Pound.

Size.	Length.	Common.	Finishing.	Cas- ing.	Brads.	Cut Spks.	Clinch
3/4	3/4 in.	...	...	...	...	...	...
7/8	1/2 in.	...	...	...	...	...	...
2d	1	800	1100	1000	...	...	...
3d	1 1/4	480	720	760	...	...	...
4d	1 1/2	288	523	368	398	...	...
5d	1 3/4	200	410	...	...	...	...
6d	2	168	268	...	224	126	95
7d	2 1/4	124	188	...	...	98	74
8d	2 1/2	88	146	...	128	75	62
9d	2 3/4	70	130	...	110	65	53
10d	3	58	102	...	91	55	28
12d	3 1/4	44	76	...	71	40	42
16d	3 1/2	34	62	...	54	27	22
20d	4	23	54	...	40	...	14 1/2
30d	4 1/2	18	...	...	33	...	12 1/2
40d	5	14	...	...	27	...	9 1/2
50d	5 1/2	10	...	...	...	...	8
60d	6	8	...	...	...	...	6
...	6 1/2	...	...	...	...	...	5 1/2
...	7	...	...	...	...	...	4 1/2
...	8	...	...	...	...	...	2 1/2

Length and Number of Steel Nails Per Pound.

Size.	Length.	Common.	Spikes.	Clinch nails.
2d	1	900	...	622
3d	1 1/4	615	...	412
4d	1 1/2	322	...	267
5d	1 3/4	250	...	230
6d	2	200	...	156
7d	2 1/4	154	...	110
8d	2 1/2	106	...	98
9d	2 3/4	85	...	86
10d	3	74	37	66
12d	3 1/4	57	32	...
16d	3 1/2	46	29	...
20d	4	29	23	...
30d	4 1/2	23	11	...
40d	5	17	13	...
50d	5 1/2	14	10	...
60d	6	10	9	...
...	6 1/2	...	8	...
...	7	...	7	...
...	8	...	6	...
...	9	...	5	...
...	10	...	4	...
...	12	...	3	...

Nails for ordinary structural work are two general types, cut nails or rectangular cross-section, tapering from head to point, and wire nails of circular cross-section, without taper. Both types are usually of steel. Cut and wire nails of larger cross-section than common nails are called spikes.

Boat spikes, used for heavy timber work, have larger cross-sections than ordinary spikes.

A clinch nail is similar to a cut nail, but is so made that it may be clinched or bent down so as to better withstand shock or vibration. They are often made of wrought iron.

The number of nails in a pound in the tables above are approximate, as different manufacturers use slightly different standards of cross-section, taper and head.

It can be noted that the nails are called 2d, 4d, 6d, etc., for sizes 1 in., 1½ in., and 2 in. in length. These were nails sold at two pence, fourpence, etc., per hundred in the 18th century, and the names "stick" even after prices changed.

I find in the Oxford English dictionary this definition of "fourpenny nail": "A nail 1½ in. long, of which 100 are to the thousand" (i.e., 10 nominal hundreds of 1,000). And so a fourpenny nail was originally a nail sold at tenpence a hundred, but the term is now used variously in England to denote a nail of large size. G. C. K.

* * *

Question 41.—Cleaning Files.

In answer to "Carpenter," re cleaning files, I use a small cleaning brush made as follows: I made a small paddle about three inches wide and eight inches long with a piece of cording brush obtained at a tannery in town. I believe, however, these brushes may be bought at hardware stores.

I have in my possession a book on "File Philosophy," obtained from the Nicholson File Co., Port Hope, in which the following information is given on cleaning files:

"The dust and small particles removed from the surface operated upon are always more or less liable to clog and fill the teeth. This tendency is especially aggravated when the file is used upon wood, horn, and such other materials as will, upon being mixed with the oil in the teeth, become baked when dry, and thus prevent the teeth from penetrating the work as well as giving them the appearance of being worn and tending to injure them by rust.

"In removing oil from the teeth of a new file, a ready way is to rub chalk or charcoal across the teeth and brush thoroughly. By repeating the operation a few times the oil will be entirely absorbed and the file will be in the best possible condition for use upon cast iron.

"When the teeth of files are clogged with wood or other soft substance which has become baked into them, if the file is held in boiling hot water for a few moments the imbedded substance becomes so loosened that it may easily be carded out of the teeth. If the operation be quickly performed, any moisture remaining will be readily evaporated by the heat retained in the file.

"This cleaning is done in several ways. Sometimes, in the finer files, by rubbing the hand over them or by drawing them across the apron of the workman; in others, by striking their edge upon the bench or vise; and again (which is a more common method with the large files), by the use of a strip of old or worn-out card clothing, tacked to a piece of wood having a handle shape at one end—a device which is usually rudely constructed by the operator."—M. E. D.

Question 42.—Bricks in a Wall.

Merriman gives the following information on estimating brick:

"If the brick be of standard size (8¼ x 4 x 2½ ins.) and laid with ½ to ⅝ in. joints, a cubic yard of masonry will require about 410 brick, or a thousand brick will lay 2½ cubic yards. If the joints are ¼ to ⅜ ins., a cubic yard will require about 495 brick, or a

thousand brick will lay 2 cubic yards. With face brick (8½ x 4 x 2½ ins.) and ½ in. joints, a cubic yard of masonry will require about 496 brick; or a thousand brick will lay 2 cubic yards. An allowance must be made for breakage and for waste in cutting brick to fit angles, etc. With good brick in massive work, this allowance need not exceed 1 or 2 per cent., but in buildings 3 to 5 per cent. is none too much."

Using these figures, a square yard of surface 12 in. thick would require for the first joint 137 brick, and for the second and third 165 brick.

For a 9 in. wall, a square yard of surface would require for first case 102 brick, and for the second and third 124 brick.—M. E. D.

Question 43.—Rat-tail File.

A "rat-tail" file is merely another name for a round file. It is also known as a "mouse-tail" file.—M. E. D.

Question 44.—Lath or Sheathing of Frame House.

Where the lath is nailed directly on the sheathing, the plaster will not key itself between the laths sufficiently to give it a firm hold. The most satisfactory method to use in this case is to strap the sheathing and nail the lath to the straps.—C. E. A.

Question 45.—Reinforcing Concrete Walls.

In the question about the reinforcing of concrete walls, having cobblestone face, the manner in which the wall is constructed is not stated, but it is assumed that the cobblestones are placed in the form and the concrete poured behind and between them.

If the concrete work is well done, the wall should not require reinforcing. Poor concrete work will, of course, give a job which cannot be relied upon under any conditions.

A good method of etching out the cobblestones on the face of the wall is to take away the forms while the concrete is still a little green and brush the walls with a very weak solution of sulphuric acid, using a stiff wire brush.—C. E. A.

* * *

How Good Work Affects a Contractor's Business

The builder should pay special attention to the professional end of his business, for this is the branch by which he gets most of the new work. Once let a man get the reputation of expert in any line, and he finds no difficulty in getting recognition from new customers. Owners are quick to see the importance of advising with a builder who is an acknowledged leader. Most often, before taking up their building project with an architect, even owners talk to a contractor. They like to consult with someone who is familiar with building, and usually go to the man with the best reputation.

* * *

Complete Catalogue on Doors Free to Builders

Benson & Bray, Limited, Midland, Ont., have issued a handsome catalogue illustrating this firm's complete line of birch, oak, chestnut, pine and ash doors. The catalogue is enclosed in a leather wallet of convenient size to fit the pocket. A separate booklet containing prices on the various grades of doors accompanies each catalogue. Copies are free to all interested.



Carpentry and Woodworking



Non-Leak Door and Window Sills

Figs. 1 and 2 in the accompanying illustration show my non-leak threshold or outdoor sill. Fig. 3 shows the same sill for cellar window frame. The sills are made tight by setting in iron strips.

The jamb is rabbeted for doors, as shown in Fig. 1. The sill groove is 5-16 in. wide x $\frac{5}{8}$ in. from 1 in. of the inside part of the sill. The outside bottom of the door is rabbeted $\frac{1}{2}$ in. high x $\frac{3}{4}$ in. wide for the clearance of the iron strip. Fig. 2 gives all the details.

Fig. 3 gives all the details of the cellar window frame. With this construction, rain cannot come inside the house.—L. E. Carpentier.

Use of Wood Trimmer on Building Construction

The wood trimmer is a machine which is being used more extensively each year by interior finish mills and contractors and builders for trimming lumber, mitring interior trim, etc., on account of the smooth, even cut which it takes and the time and labor saved.

The illustration shows a No. 6A Fox universal wood trimmer in use in a house being built by Mr. D. Burnham on Warren road, Toronto.

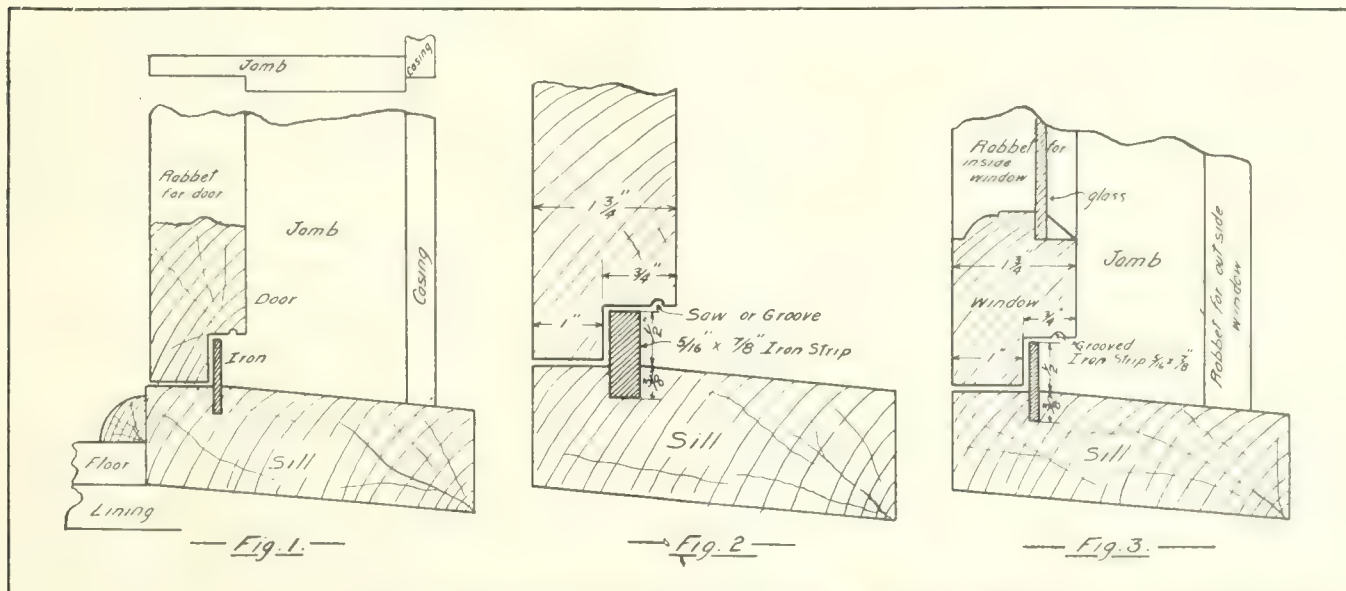
The machine shown is of the bench type, and is easily carried from room to room as it is needed. Gauges are provided on the machine so that lumber may be cut at any angle from 45 to 90 degrees, the principal angles

being marked on the bed of the machine, and the 45 and 90-degree angles being located by means of hardened stop pins. The carriage which carries the knives is operated by means of a rolling gear, which meshes



Using Fox universal wood trimmer in house erected by Mr. D. Burnham, on Warren Road, Toronto.

into a rack in the bed and another in the carriage. The power is applied to the gear by the lever, which moves in same direction as the knife.



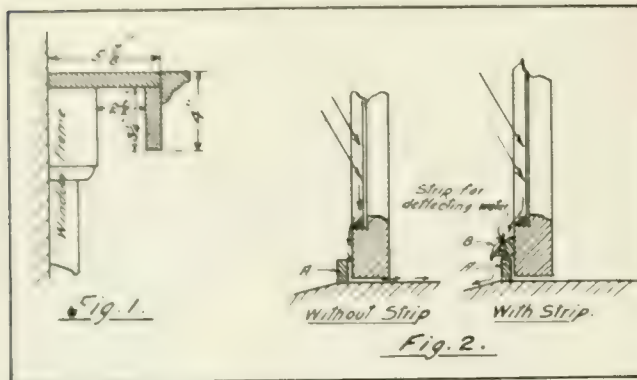
Door and window sills made water-tight by setting in iron bars.

Window Blind Dust Protector and Watertight Casement Window

The accompanying illustration shows two inexpensive window devices which increase the value of a house.

Fig. 1 shows a sectional view of boxing placed over top of window frames to protect blind and curtains from dust. Besides protecting the curtains, the boxing gives the windows a finished appearance which adds greatly to the attractiveness of the room.

A great deal of inconvenience is often experienced with casement windows which open inward, because

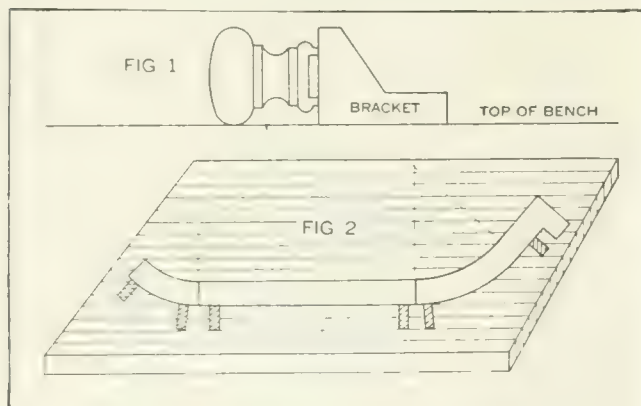


Boxing over window frame for protecting curtain, and device for making inward opening casement windows water tight.

of the rain beating against the glass and running down inside the strip A, under the sash and down the inside of the wall. Fig. 2 shows a method used to overcome this difficulty. The strip B deflects the water outside the strip A, where it runs off the outside of the window ledge.

Fitting Stair Rails

In fitting ramps and easings we formerly had more or less difficulty in getting them lined up with the straight part of rail. Our method was to spread the drawing of full-size elevation of rail, with ramp and easing, over the work bench, nail brackets around the bottom line, as shown in Figs. 1 and 2, and fit the joints



By this method no more taking apart is necessary.

to be bolted together, while holding rail and ramps against these brackets, at the same time pressing them down to the top of bench.

However, it is not always possible to get a smooth, level work bench, and I know that in our case we didn't

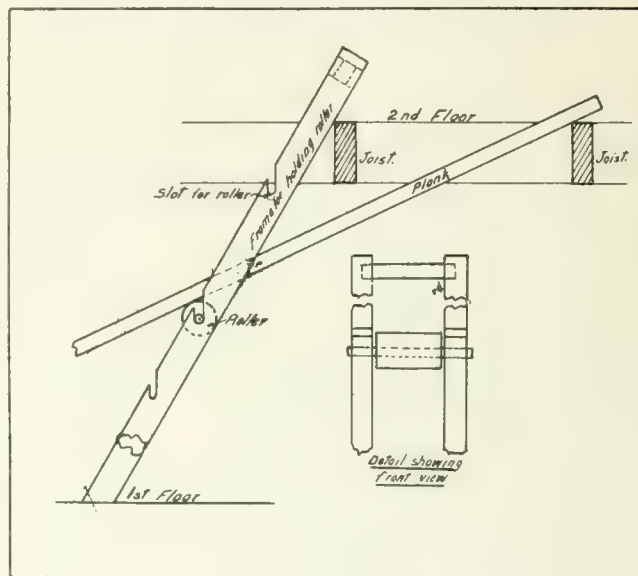
have one. After bolting the joints together, it was often found that ramp and easing had followed the bends and twists of the work bench, which made it necessary to take them apart again and do some more fitting and lining up.

To overcome this, I made a plank 3 x 30 in. x 10 ft.—Fig. 2—out of 1 1/4 x 3 in. white pine strips, glued together, which will not warp and can easily be kept straight. By fitting the rail joints on this plank and afterward bolting them together, ramps and easings will line up straight with the rail; no more taking apart is necessary, and much time is saved.—C. M., in the Woodworker.

Device That Facilitates Handling of Lumber

The accompanying sketch shows a simple but effective scheme used by Messrs. Pleues & Storey in the erection of an apartment house on Sherbourne street, Toronto, for passing planks from one floor to another. By means of the roller two men can handle long 2 1/2 in. planks which would otherwise require three men at least.

A stout frame is made for supporting the roller and



Roller used for passing heavy planks from one floor to another.

slotted in several places, as shown, so that the roller may be adjusted to suit various conditions.

If a considerable amount of lumber is to be brought into the building, a similar roller, set in a support and placed in door or window opening, will save the frames a lot of wear and tear, and also make the handling of the lumber easier.

Working Hard Woods on Emery

An effective means of working hard woods (especially across grain) is to grind them on the emery wheel. It will be found that a smooth finish can be produced and time may be saved in roughing out and finishing curved wood. A coarse wheel should be used, and kept for this purpose only. The abrasion caused by cutting wood in this manner will cause the light-colored woods to take a walnut stain, which is a good imitation. It should be found handy to many to rough, finish, stain, and polish in one operation.

all work shall be done in a substantial manner, and shall be securely bolted or spiked.

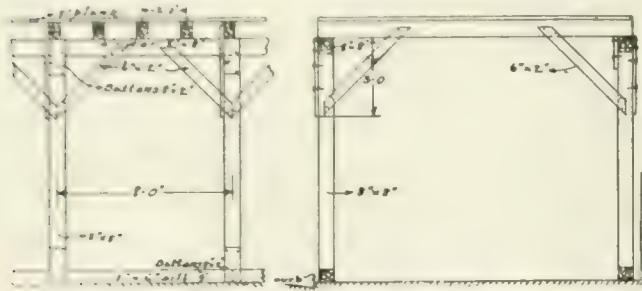
4. The girders and sills shall be fastened to the posts by means of battens not less than 2 in. thick, and with not less than two 20d spikes in each member connected.

5. The structure shall be braced by means of knee braces, both longitudinally and across at every post; the braces shall be placed at an angle of about 45 degrees, and shall connect to the posts, beams, and girders; the connection to the posts shall be at a distance of not less than 3 ft. below the top.

The bracing shall not be less than 6 ft. x 2 ft., and there shall not be less than two 20d spikes in each member connected.

6. The flooring shall be spiked to the cross beams by sufficient 20d spikes to hold the flooring securely in place.

7. For buildings exceeding one hundred feet in height and where the sidewalks are ten feet or less in width, beams shall be not less than 10 in. x 3 in., and spaced



Construction details of sidewalk sheds.

not exceeding 2 ft. centre to centre; girders not less than 8 in. x 8 in.; posts not less than 8 in. x 8 in., and spaced not exceeding 8 ft. centre to centre; sills not less than 8 in. x 6 in., and flooring not less than 2 in. in thickness.

8. For buildings exceeding 100 ft. in height, and where sidewalks are over ten feet in width, beams shall not be less than 10 in. x 4 in., and spaced not exceeding 2 ft. centre to centre; girders not less than 8 in. x 8 in.; posts not less than 8 in. x 8 in., and spaced not less than 8 in. centre to centre; sills not less than 8 in. x 6 in., and flooring not less than 2 in. in thickness.

9. For buildings exceeding 65 ft. and less than 100 ft. in height, and where sidewalks are ten feet or less in width, beams shall not be less than 8 in. x 3 in., and spaced not exceeding 2 ft. centre to centre; girders not less than 8 in. x 8 in.; posts not less than 8 in. x 8 in., and spaced not exceeding 8 ft. centre to centre; sills not less than 8 in. x 6 in., and flooring not less than 2 in. in thickness.

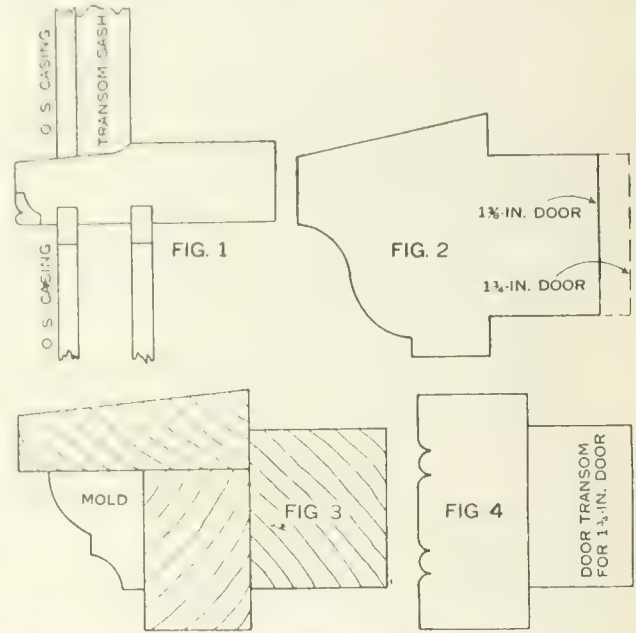
10. For buildings exceeding sixty-five feet and less than one hundred feet in height, and where sidewalks are over ten feet in width, beams shall not be less than 10 in. x 3 in., and spaced not exceeding 2 ft. centre to centre; girders not less than 8 in. x 8 in.; posts not less than 8 in. x 8 in., and spaced not exceeding 8 ft. centre to centre; sills not less than 8 in. x 6 in., and flooring not less than 2 in. in thickness.

11. These requirements are for ordinary conditions. If extraordinary loads are to be placed on the shed, heavier timbers shall be used. Deviations from the requirements may be permitted, provided the same strength of construction is secured, but all such cases must be reported to the chief inspector or superintendent

for approval. —Rudolph P. Miller, superintendent of buildings.

Transom Bar Detail

The following information and sketch regarding transom bar detail may prove of interest: Referring to sketch, Fig. 1 shows transom bar for box frame, which can be made with ogee face or bead on edge to match brick mould. Have the bar full width of frame,



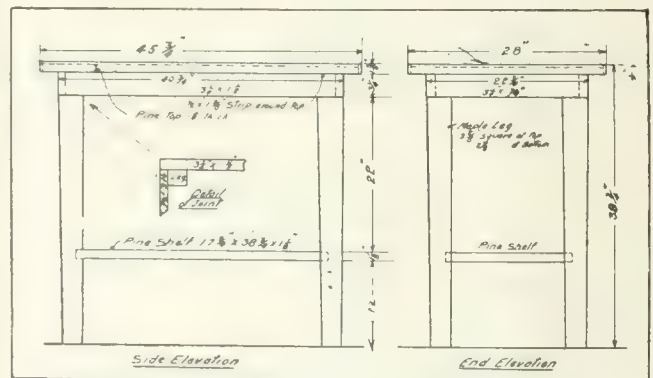
"Have the bar full width of frame."

including brick mould. Frames should be $5\frac{3}{4}$ in. for $1\frac{3}{8}$ in. sash and $6\frac{1}{2}$ in. for $1\frac{3}{4}$ in. sash, over all. Fig. 2 shows door transom; Fig. 3, door transom of cheaper make; Fig. 4, door transom for doors which swing out. —J. M. K., in Woodworker.

Pastry Table of Good Design

In the accompanying sketch is shown a pastry table of convenient size and strong construction.

The maple legs are $3\frac{3}{8}$ in. square at the top and $2\frac{7}{8}$ in. square at the bottom. A $1\frac{1}{8}$ in. pine shelf is set in



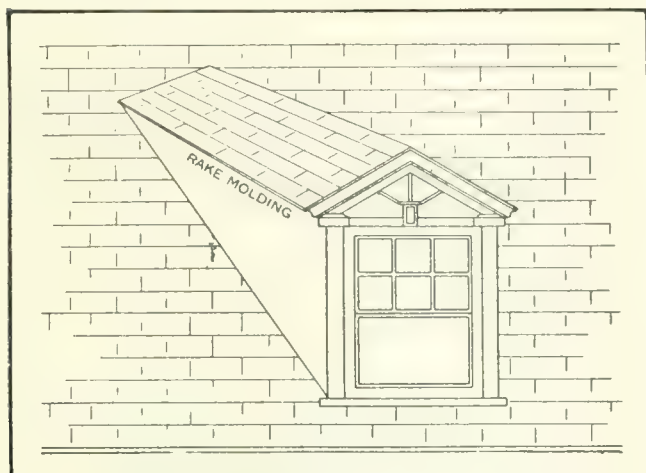
Pastry table of convenient size and strong construction.

at a distance of 12 in. from the floor. A $\frac{1}{2}$ in. x $1\frac{3}{8}$ in. strip is nailed all around the edge of the table top and projects above its surface for $\frac{1}{4}$ in.

Making a Rake Moulding

In large buildings, where both interior and exterior cornices are used, a special moulding must be made to mitre with side mould, as two mouldings of same width will not mitre together. As a rule, the architect, in drawing the plan, does not show the rake of this mould, but leaves it for the foreman to figure out.

The sketch shows a rake mould. To find out how the rake is made, the standard or side mould must be drawn first, then the vertical lines in side mould. Next,



Where a rake moulding is necessary.

the lines in rake moulding are drawn at 60 deg., then the lines from side mould to rake mould at the intersection of the vertical points. The intersecting points on rake mould are now drawn over, freehand, which gives the desired rake. To get perfect results, care should be taken to space all the lines in rake moulding the same distance apart. The sketch of dormer window shows one place where such a mould is necessary.—E. B., in the Woodworker.

Gluing up Newel Posts

Herewith is shown my method of gluing up newel posts with either mitred or square joints. A shows post with mitred joints, B is frame, and C is wedge. The frame B is made of $1\frac{1}{4} \times 2$ in. hardwood, $\frac{3}{4}$ in. larger than post. It should be mortised, tenoned, and glued together, and care taken to get it perfectly square.

To operate, set up post, place a frame on one end, and wedge up on two sides of post, as shown. This keeps post square and brings up the joints at same time. Space the frames about 8 in. apart. Two dozen frames will clamp up a set of newels for an ordinary stair, and will last for years.—F. J. Smith, in the Woodworker.

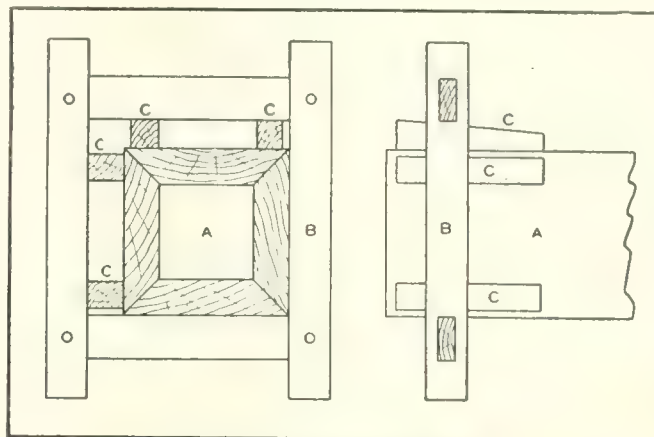
Importance of Proper Exits to Minimize Fire Dangers

The question of exits is of vital importance in minimizing fire dangers.

In most moving-picture theatres the booth containing the cinematograph machine is placed directly above the main entrance. Consequently, if a roll of film becomes ignited, the crowd must pass dangerously near

the fire in order to escape, and panic is liable to arise. There is no good reason why the machine booth should not be placed at the other end, that, in case of accident, the rush would be away from, and not toward, the centre of peril.

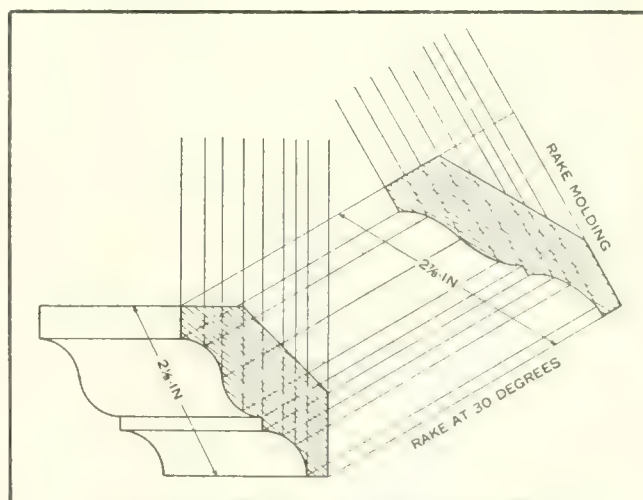
As an aid in illustrating lectures, the increasing tendency to supplant the old-fashioned lantern slides by



Methods of gluing up newel posts.

the more life-like moving pictures will increase the fire-hazard in churches, schools, Y. M. C. A.'s, and other institutions, not specially equipped for the use of cinematograph machines. In many churches the exits, even from the main body of the building, are insufficient, while, in the portion used as a Sunday school, where week-day entertainments are most frequently carried on, conditions are still worse.

Building regulations with regard to fire escapes should be made more stringent, and existing by-laws strictly enforced. In some buildings there is a tend-



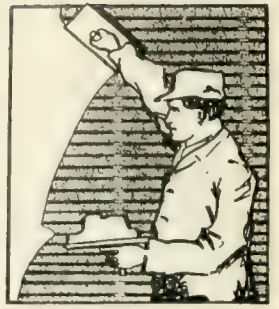
The standard or side mould must be drawn first.

ency to lock or block the way to these special exits. Sometimes the escapes lead into courtyards. Regular inspection should be provided to see that such means of egress are kept clear, and are readily opened at an instant's notice.—P. M. B.

"Be prompt as you can, but if you can't be prompt be skillful," is the motto of a large firm of contractors, which, starting a few years ago in a small way, has grown to be one of the largest in the country.



Brick Work *and* Plastering



Correct Way to Lay Hollow Tile

Inexperienced masons are inclined to lay tile too carefully. After placing one in position, many a mason will twist it about to straighten it up, losing considerable speed in the operation. The correct way to lay tile (always on edge) is to butter the outside and inside edges and cross web of the tile below (no mortar is required on intermediate webs); then, grasping a tile from the pile, butter one vertical corner (the one that will come next to the tile in the wall), and press it firmly down on the bed with a light tap of the trowel, afterward striking the joint. This gives a full bed of mortar, and, in addition, fills the vertical joint between units, all in a single, quick, efficient operation. The bed should be rather thick with mortar of just the right consistency, so that pressure in bedding allows each tile to sink, making a close joint. This method makes a good job—and a speedy one as well.

After the walls of a house are laid up to the plate, a couple of men should go over the job, slushing joints full of mortar. Any openings on rugged jobs are thus corrected, and it is cheaper to do work this way than to have masons carefully and laboriously point up each joint as they go along, and the result is equally as good.

Some Notes on the Use of Terra Cotta*

In Europe there are numerous examples of architectural terra cotta, which have been exposed to weather for three or four centuries, and which are still in good condition, while examples of stonework, subject to the same conditions, are more or less worn and decayed. There is at the Louvre, in Paris, at the present time, some glazed terra cotta, said to have been made by the Assyrians in the sixth century, before the birth of Christ. In other museums there are some vases and other ancient terra cottas from Egypt and Greece, as well as some famous examples of work made in the Middle Ages, some of which are as perfect as if recently made. All these ancient terra cottas tell the story of durability and proclaim terra cotta to be a material worthy of the genius of those artists of antiquity who wrought so beautifully in this medium.

Composition and Manufacture.

Terra cotta is composed of practically the same material as bricks, and its characteristics, as far as the material is concerned, are the same. It requires, however, for its successful production, a much better quality of clay than is generally used for bricks, while the process of manufacture is entirely different.

The first consideration in the manufacture of terra

* Adapted from a paper read by H. L. Fitzsimmons before the Prince Albert Builders' Exchange.

cotta is the selection of the material. No one locality gives all the clay required for first-class material, and each shade and tint of terra cotta requires the mingling of certain clays from different localities to regulate the color. The colors vary from light cream to dark red.

A partial vitrification of the body is desirable, but a clay that is too fusible causes warping in the kiln. To overcome this tendency, one, at least, of the component clays should be highly refractory, and to further ensure straightness from 20 to 25 per cent. of ground burned clay, called "grog" or "chamotte," should be added. The clay, after being mined, is sometimes seasoned, after which any one of several methods is employed to



Small brick mantel in a Berlin, Ont., residence.

thoroughly grind and mix the clay with "grog" and water. Usually it is finally tempered in a pug mill before being sent to the pressing room.

If several pieces of terra cotta of the same size and shape are required, a full size model of plaster and clay is first made, and from this a plaster mould is taken. In the making of these models and moulds, the highest grade of skilled labor is required. When the moulds are dry they are sent to the pressing department. Here the plastic clay is pressed into the moulds by hand, and when partially dry, the work is turned out on to the floor. It is then ready for the carver and modeler, if it is decorative work that requires the use of their tools; or for the clay finisher if it only requires undercutting or some special work to make it fit in with other construction.

The Surface Treatment.

The work is carefully dried on the drying floor and is ready to receive the surface treatment. This is done

by spraying on the surface of it, by means of compressed air and an atomizer, a thin "slip" or liquid mixture which, when burned, gives the ware a surface that is vitrified or full-glazed, as the case may be. This operation also gives the terra cotta greater evenness in tone and its exact shade of color. The body colors used are comparatively few, while the surface colors are almost without limit. It is next put into the kilns, where it remains for 7 or 15 days, according to the size of the kiln, before it is ready for use. The kilns used are the down-draught, beehive shaped ones, and an inside lining or "muffle" prevents the flames from coming in contact with the terra cotta. In this drying and burning process all the water in the clay is expelled, and in consequence a shrinkage in the size of the pieces takes place. This shrinkage is about one inch to the foot, for which allowance is made by the draughtsman who prepares the drawings for the mouldmaker. The pieces are then carefully inspected, fitted and numbered in accordance with setting drawing prepared for that purpose. The fitting operation consists of placing the various pieces in the relative positions which they would have in the building for which they are intended, and then, with a chisel, the joints are trimmed where necessary, so that all the pieces will fit accurately together. By the use of the rubbing beds the joints are rubbed to an absolutely straight line in the same manner that stonework is rubbed. The rubbing of the joints is of great advantage in ashlar work, as it insures absolute alignment of the joints.

The numbering operation consists of numbering each piece with a number for identification. A corresponding number is placed on the setting drawings. The work is then shipped to the building.

If only one or two pieces of terra cotta are to be made, or if no repetition is intended, no moulds are used, the clay being modeled by hand, with the use of templates, into the required shape. Single pieces of modeling are worked on ashlar and plain blocks. The finished product thus bears directly the impress of the modeling artist. It can be studied, improved or modified, and, when entirely satisfactory, burned. On this account terra cotta possesses, for highly decorative work, a distinct advantage. It has this advantage even where repetition is intended and moulds are made, because the ornamental portions of the models are made of clay which, under all circumstances, is the best material that can be used for modeling purposes. When possible the architect examines the model in person and the alterations are then made under his eye.

Sometimes photographs are made and sent for his inspection and approval. If the ornament is of sufficient importance to make it desirable to bear the direct touch of the modeling artist he can retouch each piece after it is turned out of the mould.

Terra cotta is usually made in blocks from 24 to 30 inches long, from 6 to 12 inches deep and of a height determined by the character of the work. To save material and prevent warping, the blocks are formed of an outer shell, connected and braced by partitions about $1\frac{1}{4}$ inches thick. The partitions should be arranged so that the spaces do not exceed 6 inches, and should have numerous holes in them to form clinches for the mortar and brickwork used for filling.

The Kinds of Terra Cotta to Use.

The body of all good terra cotta is very much the same, but there are several ways of treating the surface, resulting in products which may be classified as

follows: Standard terra cotta, vitreous surface terra cotta, mat-glazed terra cotta, full-glazed terra cotta and polychrome terra cotta. Standard terra cotta has no surface given it, which affects its porosity, a drop of water placed upon it being soon absorbed; it will absorb, also, a great amount of dirt from the atmosphere, and will become very much darker from continual exposure. On some buildings this weathering down is not objectionable; in fact, it sometimes lends a charm, producing an antique appearance, which is often very desirable from an artistic point of view. Someone has said that "time is the greatest artist," and, therefore, when it is desired to produce an aged effect, standard terra cotta should be used. It is, consequently, a good material to use for rustic work in connection with country houses, college buildings, gateways and centre styles of churches. This class of material is made in any color desired.

Vitreous surface terra cotta has a very thin spray of the surface which vitrifies in the burning process, forming a thin glaze which sheds water. This terra cotta will not absorb much dirt from the atmosphere, as the rain of each storm washes it off. It therefore practically retains its original color. This class of material is made in any color desired and is used more than any other kind at the present time, as it seems to satisfy the greatest number of requirements.

Glazed Terra Cotta.

In Western cities where soft coal is used, and where, consequently, most buildings are cleaned frequently, any material of a non-porous nature is very desirable, and it has been found that glazed terra cotta ranks with the most superior materials in this respect. On this account white glazed terra cotta is used to a great extent in these cities. The lustre of the glaze is deadened for artistic reasons, the glare of the sunlight on full glazed terra cotta being very severe. This is now done in the process of burning, as it has been found that sand blasting the material neutralizes the purpose of the glaze. This method has, therefore, long been abandoned by the leading manufacturers. There are many examples of buildings constructed of this material in the West, and the most notable example in the East is the Plaza Hotel, New York.

For light courts, loggias to office buildings, theatres, interiors of railway stations, train sheds and power houses, the full glazed terra cotta is preferable, as it helps illumination and gives a more brilliant effect.

The full glazed terra cotta and mat-glazed terra cotta are made in any color required, and when various colors are used on the same buildings, the material is termed polychrome. The various colors may be applied to the same piece if desired, or each separate color may be kept on a separate piece, if the design will permit.



The Use of Hollow Tile in Constructing Window Lintels

Expert users of hollow tile have devised many economical methods for building lintels over window and door openings. One popular way is to use reinforced concrete and tile lintels in which ordinary hollow tiles are stuffed with concrete reinforced by steel rods. To do this efficiently and inexpensively, make a template from a piece of board, with holes cut in it marking the location of the two or more steel rods. Placing this template on the floor, stick rods in the holes, string tiles

on the rods, and fill with concrete. Nothing could be easier, and the finished lintel, after the concrete has set, is handled precisely like a stone lintel—lifted up on the wall and set in place. Some contractors prefer to use steel and tile lintels, and a very economical pattern consists of a channel and angle bolted and riveted together. On some jobs lintels like this have proved cheaper than reinforced concrete and tile lintels.

Catalogue and Book Review

"Tests of Bond Between Concrete and Steel," by Duff A. Abrams, has just been issued as Bulletin No. 71, by the Engineering Experiment Station of the University of Illinois.

In designing structures of reinforced concrete, it is important to know the amount of stress which may be developed between the surface of the reinforcing bars and the surrounding concrete before failure is produced by the slipping of the bars. This stress is what is commonly termed "bond." The above-mentioned bulletin gives the results obtained by pulling out bars embedded in blocks of concrete and also the results of tests made to study the bond stresses developed in large reinforced concrete beams. Nearly 2,000 tests are reported, and a wide range of conditions is represented. This is one of the most exhaustive studies of the amount and distribution of the bond stress between concrete and steel which has appeared. Copies of Bulletin No. 71 may be obtained gratis upon application to C. R. Richards, acting director of the Engineering Experiment Station, University of Illinois, Urbana, Illinois.

How a Disston Hand Saw is Made.—A booklet issued by Harry Disston & Sons, Philadelphia, Pa., gives an illustrated description of the making of carpenters'

saws. It makes an interesting story, and will give carpenters an idea of how to judge a good saw.

Concrete Reinforcing.—Technical Library Number Eight, Second Edition on Concrete Reinforcing, is a booklet issued by Joseph T. Ryerson & Son, Chicago, describing the advantages of their steel service to the concrete contractor in the matter of quick delivery, bending of reinforcing to special shapes, etc. Besides the description of a full line of concrete reinforcing stock, the booklet contains several valuable tables of safe loads and reinforcing necessary for concrete work.

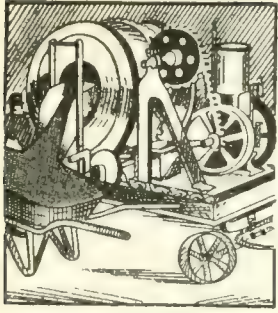
Increasing the Efficiency of Workmen

No matter how able your foreman may be, he cannot get high-grade work out of low-grade men. As a matter of fact, the foreman is usually the better judge of men than his boss. He it is who comes into most intimate contact with them. He knows who the slow ones are, as well as the quick ones. He can, after a few days of observation, tell who among the new men are up to the right mark—efficient, alert, reliable workmen. For this reason, the most successful contractors usually give their foremen considerable latitude in hiring and discharging help, all of which has a good effect on the men themselves, who are inclined to look down upon a foreman who has not the power to discharge them.

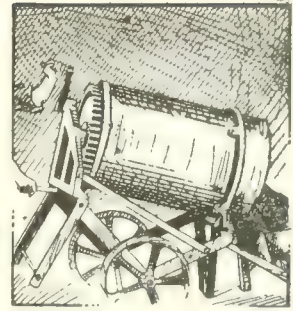
Able foremen can do much toward increasing the efficiency of a gang by the way they place their men. Putting three or four slow workers together always results in slowing down the work. Placing several hustlers together frequently speeds work up beyond the point where it will be well done. The most satisfactory way is to mix men up, putting a slow man alongside of a fast one, which seems to increase the efficiency of both.



Particularly attractive plaster decorations in the Murray Theatre, Fort William, Ont. The relief work is done in staff and nailed on the partitions. The lathing, plastering and ornamental work was executed by W. J. Hynes, Limited, Toronto.



Concrete Department



Repairing Building Supports and Foundations with Concrete

Building supports and foundations may be repaired with concrete. For example, let it be assumed that a building is resting upon wooden or timber supports which have decayed at the ground level, which always occurs when timber is subjected to alternate wetting

tion may be made larger at the bottom than at the top by sloping one side of the box form, as shown in Fig. 1.

To Replace a Continuous Foundation With Concrete.

This can be done, even where buildings are quite large and the foundation is of the continuous type, requiring jacking up of the structure. At necessary points remove a few heavy stones or bricks, as the case may be, and insert short pieces of heavy timber to wedge up the building. The building should be carefully raised by this means until entirely free from all foundation. Then remove all of the old foundation and set in place the forms for the concrete. In the case of small buildings, it is usually feasible to raise them high enough to allow working room, in which case the form may be filled right up to the top with concrete. The concrete should be a wet mixture consisting of 1 part Portland cement, 2 parts sand, and 4 parts stone.

Should the building be too large and heavy to be raised to a height that will give head room, merely make the foundations 3 ins. wider than the sill. Then when the forms are carried to the desired height the concrete may be inserted through this extra space of 3 ins. To facilitate the placing of the first layers of concrete, the top board of the forms may be left off

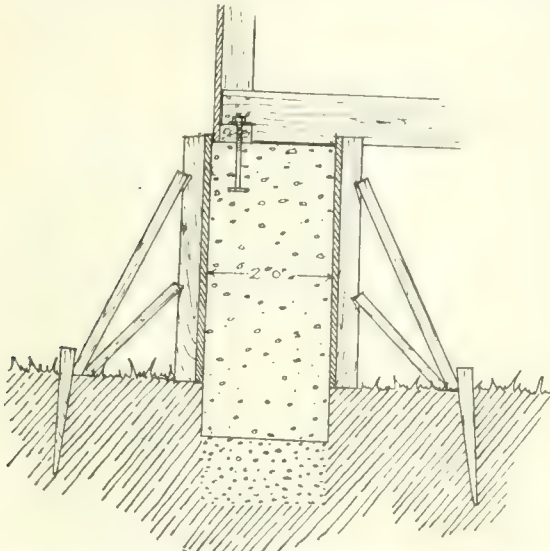


Fig. 2. Construction of forms used in repairing building supports

and drying. It is an exceedingly simple matter to remedy a situation of this kind with concrete. One has merely to support the building with temporary struts, which should be placed near the post to be removed. The old post should then be sawed off entirely above the rotten part, the suspended part consisting of sound timber. Directly under the suspended post, dig a hole 2 ft. deep and slightly larger than the post itself. Fill the hole with a mixture of concrete consisting of 1 part Portland cement, 2 parts sand, and 4 parts stone. On top of this place a box with open ends, its inside measurement conforming to the dimensions of the hole. This box should be made and ready to use before any concrete is mixed or placed. Its length should be sufficient to reach from the ground to a few inches above the bottom of the sawed support. When in position, fill it with concrete until the bottom of the sawed-off post is imbedded about a half-inch in the concrete. Proceed as above with each support, leaving the boxes or forms in place for one week, and after two weeks the struts used as a temporary support for the building may be removed. The concrete should be mixed thoroughly wet and tamped or puddled with a stick while being placed.

In the case of large buildings elevated quite a distance above the ground, the new support or founda-



Fig. 1. Supports of concrete to a building already constructed.

until ready to place the last of the concrete. This last batch should be very wet. The concrete should be tamped until it comes up flush to the bottom of the sill and to the entire width of the wall.

Make certain that a space is left in the concrete wall under and on the sides of the underpinning support so that the building may be lowered onto the new foundation and the timber removed. This opening, of course, must be slightly larger than the underpinning support. The building should not be lowered until the foundation has been in place two weeks, and after this is done the opening occupied by the underpinning may be filled with concrete.

Fig. 2 shows how the forms should be constructed.

How to Make Concrete Posts

In making concrete posts the easiest and cheapest wooden mould to make is the straight mould, or one for a post which does not taper. Such moulds are merely long boxes having various devices for making the moulding of the post a simple matter. On account of the amount of lumber saved and the ease with which these moulds are filled, straight moulds are generally made in "sets" or "gangs," by constructing several side by side with a continuous bottom and end pieces.

Posts should be reinforced with a rod or wire in each



Concrete field posts. Braces at corner post are also concrete.

corner. In most cases round bars three-sixteenth or one-fourth inch in diameter are used.

After the moulds have been oiled or soaped, the concrete should be placed in them at once. If, for any reason, the concrete stands thirty minutes before using, it should be thrown away and a new batch mixed, for cement, if it has once partially set, makes weak, dangerous concrete, even though it is rettempered by turning or adding water. After the moulds are filled evenly to the depth of three-fourths of an inch or one inch, according to the spacing of the reinforcing rods or wires, the reinforcement should be laid in, properly spaced by means of at least three "fool-proof" wire spacers. The concrete should then be poured in until the moulds are filled within three-fourths of an inch or one inch of the top, when the remaining reinforcement is fitted in place in the manner described above, and the moulds are completely filled. To render the concrete more compact, a crowbar or a pinch bar should be placed under each corner of the mould successively and moved up and down quickly. This vibration makes the concrete more compact by shaking out the air bubbles, but there will be very few of these bubbles if the concrete is thoroughly mixed and of proper consistency. If desired, the exposed corners of the post may be beveled with an "edger" and the open face given a neat finish by using a trowel immediately after the surface water has been absorbed and before the concrete has become too hard.

The following are exceedingly important precautions:

Do not expose the newly-made posts to wind, hot sunshine, or frost.

Do not remove the mould from the green post until thoroughly hardened, which generally requires two or three days. Even then the post must remain on the bottom board in the shade and not be disturbed for at least a week. During the first two days keep the post wet and covered with canvas, burlap, or other clean material, and dampen it thereafter each day for about a week.

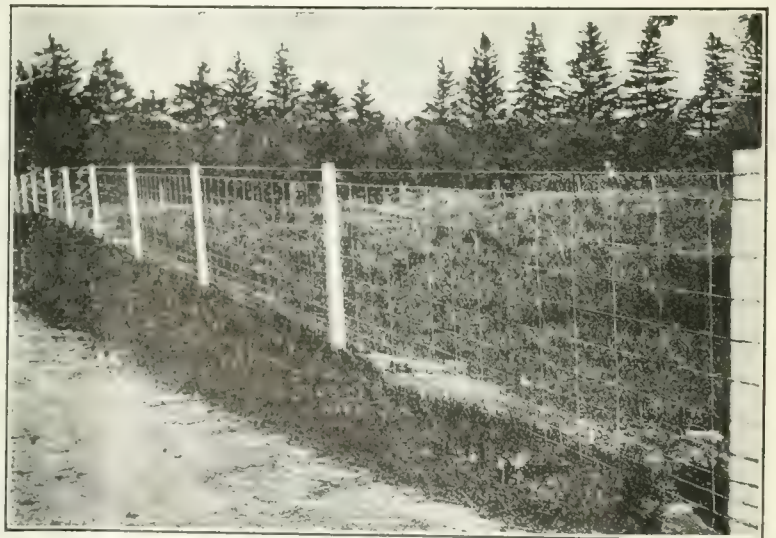
The Mixture.

In mixing the concrete, if unscreened "bank-run" gravel is decided upon, it should be used in the proportion of 1 part of cement to 4 parts of gravel. For crushed rock or screened gravel (which is much better than "bank-run" gravel), the concrete should be used in the proportion of 1 part of cement, 2 parts of sand, and 4 parts of rock or gravel. All measurements should be made with the material poured loosely into the measuring box, and the box, when full, should be carefully leveled.

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Making Concrete Waterproof

A cheap material for making concrete waterproof, which is being used with success in some parts of the country, consists of finely divided iron filings, borings, turnings, etc. The iron has the property of making concrete waterproof because of rusting; the rust fills the pores and seals them up tightly. This simple means of making concrete waterproof has been sold as trade secret with considerable profit to the promoters. The cost of the process is not as high as of some other waterproofing methods not as effective. This process should revolutionize some branches of concrete work and save many dollars.



A line of concrete posts with wire fencing attached.

Varnishing a Floor

A man I know decided that it was hardly worth while to hire a professional to do so simple a thing as varnish a floor, so he bought a brush and a can of varnish, which he took home after his day's work was

done, with the intention of applying it to the floor. Two or three hours later he called to his wife to witness the artistic triumph.

"How does it look?" he asked.

"Fine," she replied, sniffing the air. "Fine! And

none too soon to start preaching against the dangers of careless work in winter concreting. Despite the emphasis placed on the subject, there has been a harvest of disasters each winter, serious always in the financial loss, and sometimes in life.

The precautions necessary are so simple that there is no excuse for not applying them. To discourage concreting altogether in cold weather is not only unnecessary, but would result to tying up to no good purpose the capital invested in construction plant and in losses owing to postponement of the use of the structures. There are construction difficulties in other lines, but they are not allowed to interfere with the execution of the work. The heating of the material and the protection of the fresh concrete from freezing are sufficient measures to permit work to proceed in all but the very coldest weather. With intelligent supervision and close attention to the heating equipment there is no reason why even in zero weather pouring should not be continued.

Persistent efforts, beginning at once, may help in lowering materially the disaster record made last winter. Cement manufacturers and their salesmen, cement

jobbers, building department officials, engineers, architects and contractors experienced in cold-weather work can all bear a part in the educational campaign. The reward will come in greater confidence in concrete as a construction material and in the saving in life and property.

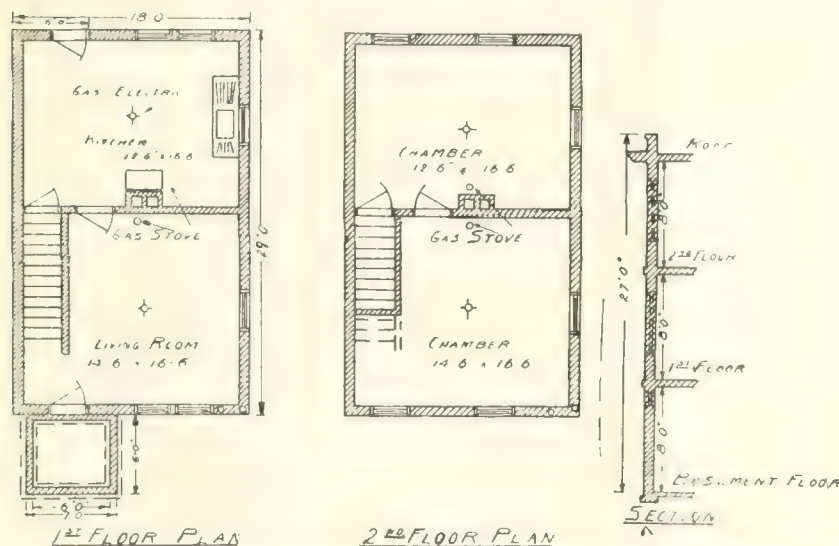


Fig. 1. Sketches showing essential arrangements of low cost concrete houses.

a novel idea. How did you happen to think of it?"

"Wh—what—what's that?" he asked.

"Why didn't you use varnish?"

"Why—what—I did use varnish."

"Oh, no," said his wife, "you got hold of the wrong can. This is maple syrup."

Poured Concrete Houses Erected at Low Cost

The accompanying floor plans are of one of several poured concrete houses erected by a large manufacturing concern for its employees. This house is rectangular in plan, 29 ft. v. 18 ft. outside measurements, 27 ft. from grade to cornice, 12 in. foundations, and 9 in. walls.

Each floor is divided by a cross-hall into two main rooms, and the stairs, going up from the front room, are of concrete.

The records kept show that the dwelling was erected in 12 working days and at a cost of \$890. This price does not include a bath tub.

The reinforcement used was $\frac{1}{2}$ in. round rods, 6 in. on centres in both directions. The concrete was a 1:2:3 mix.

The surface coat on the floor is of a mortar mixed with red oxide of iron, producing, with a grey stone narrow border, an attractive and low cost finish. The top surface was put on immediately following the pouring of the floor.

The roof was finished with a top surface of water-proofed mortar. The interior was finished with a standard interior paint in two coats.—Concrete-Cement Age.

Concrete Work in Cold Weather

An article in a recent issue of the "Engineering Record" says that it is

Methods of Mixing Concrete

The manner of mixing the ingredients for concrete varies widely. Some contractors mix the materials dry until a uniform color and appearance are secured before the water is added. Others put in the material and the water at once. Either way will produce good results except for hand-mixing, where the mixing of the materials in the dry state is the general practice. It may be stated, in general, that if too much time is not consumed in the mixing, a good result can be obtained in any of the many ways practised, if only the mixing is thorough.

George W. Britnell, with offices in the Toronto Builders' Exchange, is now representing the Palmer-Lyon Cement Co., New York City, manufacturers of hydrated lime.

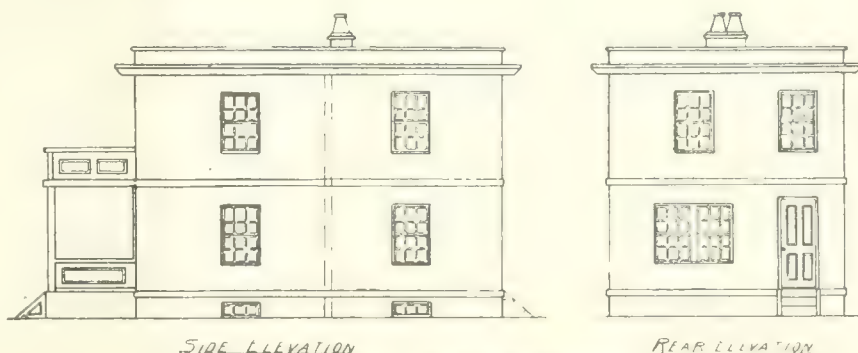


Fig. 2. Elevations of low cost concrete houses.

Gas Fireplaces for the Economical Heating of Residences

This article places before the Builder the value of gas fireplaces in residences or in the smaller buildings such as offices, apartments, etc.—The action of this type of fireplace is explained showing how the heat is radiated to the objects in a room thus forming an excellent system of heating.

STAFF ARTICLE I

GAS fireplaces are both economical and hygienic for residential heating. The effect of the gas is to radiate the heat, thus warming up the walls, floors, and objects in a room, the air of the room being warmed by contact with these objects. Radiant heat does not noticeably warm the air, but passes through it, warming any material which intercepts the rays. These surfaces gradually warm the air by convection. This strange action of radiant heat is the reason of its being declared by scientific authorities to be the most suitable for warming living rooms.

Action of Radiating Heat.

Prof. Vivian B. Lewis, F.I.C., F.C.S., professor of chemistry at the Royal Naval College, Greenwich, lecturing on the radiation of heat, states:

"Apart from its being more healthy to breathe cool than hot air, there is another important point to consider. The normal temperature of the body is 98 degrees Fahr., and this temperature is maintained by the slow combustion processes going on in the body. By the laws of radiation, a heated surface parts with its heat more or less rapidly, according to the temperature of the surrounding bodies; so that if a person be sitting in a room filled with warm air, but near to a wall colder than the air, his body will rapidly part with heat by radiation to the wall, and a sensation of chill is the result. With the open fire this is never the case, as the radiant heat from the fire heats the walls of the room to a temperature higher than that of the air."

It should be understood that these statements apply to domestic heating only. For heating large buildings, such as theatres, churches, etc., radiation would be too slow a means.

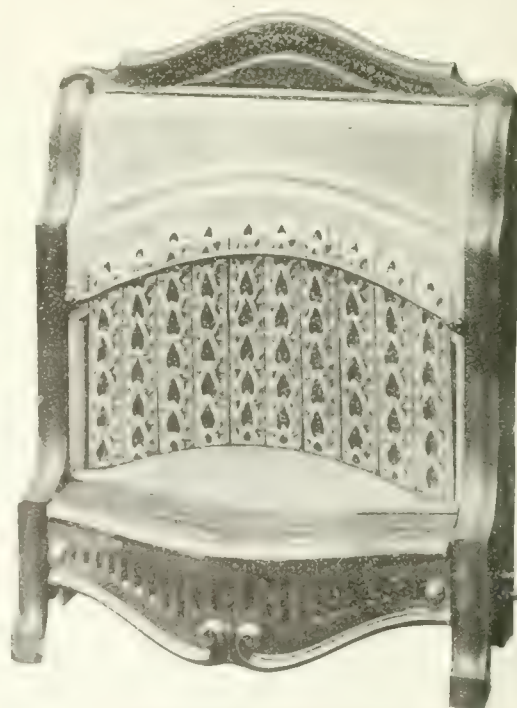
Effect of Combustion.

Radiant heat involves the combustion of gas in the apartment, which brings up the question: "What is the effect of this combustion on the air?" Perfect



A new style gas grate, shown set in a mantel of good design.

"We must take into account, first, the way in which the heat passes from the stove to the room and its occupants. With the coal fire this is done almost entirely by radiant heat, which does not directly raise the temperature of the air, but radiates heat to the floor, walls, and furniture, which absorb it and again slowly part with a portion of their heat to the air in contact with them; so that the walls and other solid bodies in the room are at a higher temperature than the air. There is no doubt as to this being the true method of heating. It is the way nature heats the world, and the sun's rays beating down through the atmosphere leave it fresh and unwarmed; but as they reach solid matter, they rapidly raise its temperature, and the solids, in turn, by convection gradually warm the air.



A closer view of the same grate.

combustion produces CO_2 —carbonic acid gas. Imperfect combustion often results in CO —carbon monoxide. To breathe air containing only one-half per cent. CO is dangerous, as it interferes with the proper supply of oxygen from the lungs to the blood. Imperfect combustion may be caused by a poor draught, or an insufficient supply of oxygen.

Carbonic acid gas is the natural product of perfect combustion, and while the general belief is that this is poisonous, it has been proven by scientists to be harmless except in quantities which exceed anything ever met in factory or domestic conditions.

CO₂ exhaled from the lungs is harmless in itself, as any injurious element is not in the CO₂ itself, but in the organic matter exhaled at the same time. CO₂ exhaled from a human subject, in proportion as low as 10 parts in 10,000, is very harmful, yet 10 times that amount of CO₂ not produced by human respiration is perfectly harmless. Gas-flame combustion burns up any poisonous, albuminous matter breathed into the atmosphere, and thus purifies it. While CO₂ has been proven to be harmless, it is, however, essential, if one wishes to maintain perfect hygienic conditions, that no such gas be allowed to accumulate in the apartment. Proper ventilation will take care of this.

Three conclusions can be drawn from the foregoing, viz.:

(a) For domestic apartments, radiant heat, supplemented by a moderate proportion of convected heat at a low temperature, is the best form of warmth.

(b) To obtain this radiant heat, the combustion must be perfect, and no carbon monoxide produced.

(c) The carbonic acid gas produced should not be allowed to enter the room.

Distribution of Heating Power of Gas Fires.

For years "gas fires" have been on the market, but have been regarded as experiments, and not altogether without cause. Experiments in chemical laboratories by scientists have, however, brought "gas fires" out of this stage and placed them on the market as practical gas appliances, and an excellent means of domestic heating. The design has received careful attention as well as the parts concerned in the production of perfect combustion. Gas fires now being manufactured give out heat by radiation as much as 55 per cent. of the total B. T. U. in the gas consumed. About 25 per cent. of the remaining B. T. U. is given off as convected heat, at a low temperature, moderately warming the air. The balance of the heating power of the gas is used to create a draught in the flue, removing all products of combustion, and assisting in the proper ventilation of the apartment.

A feature of the gas fire is that the heat may be had at any time by using a match, and that the heat may be easily regulated by opening or closing the gas supply valve. There is also an economy in labor in connection with the gas fire plan.

Second Annual Outing of Toronto Builders' Exchange

Fine weather and an excellent program combined to produce great fun at the picnic to Queenston Heights on July 16—The races, baseball game and tug-of-war were all contested hotly—The affair pronounced the best ever.

BY A STAFF REPRESENTATIVE.

TO date, there have been two "big" days in the 1914 history of the Toronto Builders' Exchange.

The first was early in the year, the occasion being the monster "At-Home," to celebrate the opening of the new offices of the exchange. The second, and THE BIG ONE, was on July 16, when the members journeyed to Queenston Heights for the second annual picnic.

The members of the exchange evidently do not believe in letting pleasure interfere with business, for the crowd this year was not quite as large as last, the good times and building activity keeping many away. However, what the excursion lacked in numbers was more than made up in the amount of fun and pleasure had.

Barring extremely hot weather and a slight overcrowding on the boat, nothing happened to mar the day. The overcrowding was due to the fact that there were three other excursions on the boat, but all were from Sunday schools, so the builders were in good company.

Left at 9 o'Clock.

Promptly at 9 o'clock the ss. Cayuga left the Yonge street wharf, and was hardly out of the harbor before someone opened the piano, and the fun started. The members of the four parties mixed freely and engaged in dancing, despite the hot weather. There were exponents of all the new dances—the tango, maxixe, turkey trot, hesitation, Texas Tommy—and the non-dancers were treated to some fine exhibitions of "the graceful art." "Slim" Hemingway led the Exchange brigade in this department.

Choirs on Board.

Gathered together in various parts of the ship were many little groups straining their vocal chords in pre-



Before the start of the men's smoking race. From left to right are: Geo. Oakley, Jr., Ed. Burnett (behind), Bill Scott and Ed. Chatterton.

paration for dear knows what. The harmony was great (?).

Arrival at Queenston.

The sail up the historic Niagara River to Lewiston passed all too quickly, and the picnickers soon reached the grounds surrounding Brock's monument. Lunch baskets were opened and the contents "put away."

Thanks to the committee in charge, tea, milk, hot water, and ice-cream were dispensed free of charge.

Some Interesting Races.

Lunch over, everyone adjourned to the race course to see the "doggies" perform. They were all there—Chas. Bulley, Eddie Curry, Jim Munro, Ed. Gearing, Bill Scott, Walter Page, Ed. Chatterton, and a host of others. There were races for everybody, from the smallest tots to men—heads of firms—over 60 years of age. Then, too, there was a ball game and a tug-of-war between the cut stone contractors and the mason



The tug-of-war between the cut stone men in action. Chatterton, Ed. Gearing, H. W. Asker, A. W. Steward, Chas. Oakley, C. E. Poth, and Geo. Isers.

contractors. This latter event was the tid-bit of the day. The stone men were under the leadership of "Honey Boy" Terrill, while the hod carriers' bosses were captained by Bill Self. It was decided that the team winning two pulls out of three would be the victors. Terrill did not think his services were needed in the fray, so watched the first pull from the sidelines. His judgment seemed correct, for his side easily won the first pull. However, in the second try there was a different story. The brick men succeeded in "rolling" the other fellows and pulled them off their feet. Terrill jumped to the rescue in the third frame, and, after tugging and straining for about five minutes, the masons were conquered.

The Ball Game.

The baseball game, between Eddie Curry's "West Ends" and Jack Scott's "East Ends," while it lasted, was a "humdinger," but, owing to the lateness of the hour, after the races had been run off, the battle had to be cut short. After two innings of spectacular (?) ball, the west end team were returned winners by a score of 2-1.

The Foot Races.

Probably the best foot race of the day was the 100 yards open for men. This was won by Ed. Chatterton, of the B. O. T. Manufacturing Co., in record time. Bill Scott was second, and Chas. Bulley, the president of the exchange, was third.

The smoking race, in which each man was given a corn-cob pipe filled with tobacco, created a lot of fun. The rules of the race were that the man who crossed the finishing line first, provided he had his pipe going, was the winner. Chatterton also won this event, but withdrew and awarded his prize to Sam Hurst, who was second. Mr. Hurst, in turn, gave his prize to E. French, who was third.

The race for heads of firms resulted in a walk-over for Walter Page. Mr. Page ran a great race.

Mrs. Bob Scott captured the married ladies' event, and Miss Hewitt that for single ladies.

"Picnicettes."

Jim Munro was content to sit in the shade and watch the races from a distance.

Everyone is still wondering how Chatterton succeeded in capturing two races, when it is remembered what a load was on his mind.

Jim McKenzie attended a picnic for the first time. He says he'll never miss another if he lives to be a hundred. He's still talking about the good time he had.

If President Bulley had thrown away his Perfecto before the race, he probably would have won. He was coming strong at the finish.

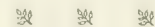
"Honey Boy" Terrill started in the box for Curry's team, but had to be relieved by Ed. Burnett before the first inning was over. From his delivery, one would judge he is more used to cricket than baseball.

Secretary Flower was umpire. If it had not been for the protection offered by his friends, some other person would now be occupying an easy chair on the fourth floor of the Goodyear building.

"Slim" Hemingway performed excellently in the box for Scott's aggregation. All "Slim" had to do was to reach over and the ball was a couple of feet from the home plate.

Bill Britnell was there dispensing his favorite beverage—tea.

Everyone stated that they did not know Jim Munro was such an ice cream kid. Jim blames it on the heat of the day.



Good Work Pays the Best

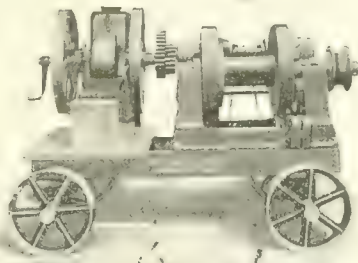
You cannot build work too well. Mechanics sometimes spend too much time on it, puttering around, because they are not skilled enough to work well and



Geo. Oakley Jr. superintending the laying out of the baseball diamond.

work fast—but no job can be too carefully done. The contractor who thinks it can, will lose out in the long run.

Nothing makes a bigger hit with architect and owner than first-class work. Cheap work, even at a saving in cost, never yet impressed an architect. Everybody wants a fine job—one that will prove out—one that will stand.

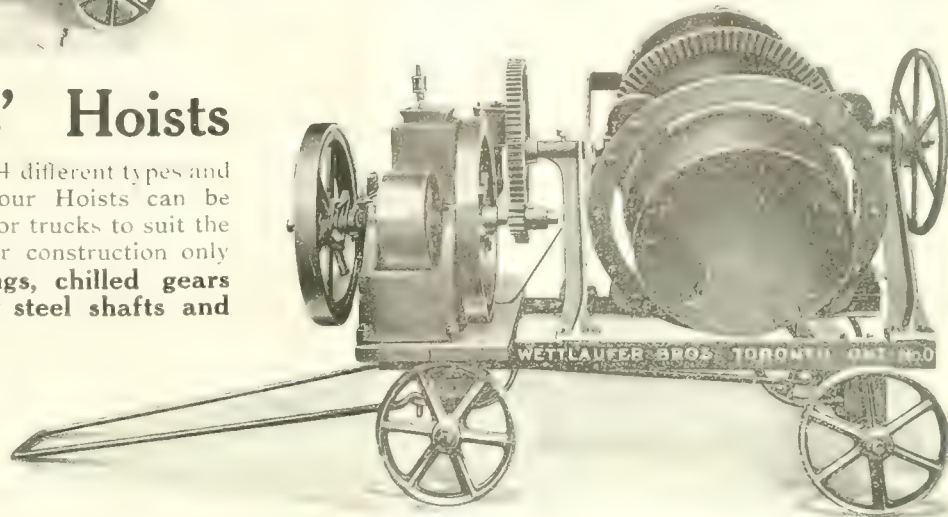


Wettlaufer Concrete Machinery

is giving satisfaction from Coast to Coast

Builders' Hoists

We manufacture 14 different types and sizes. Any of our Hoists can be mounted on skids or trucks to suit the customer. In their construction only **semi steel castings, chilled gears and extra heavy steel shafts and bearings** are used.



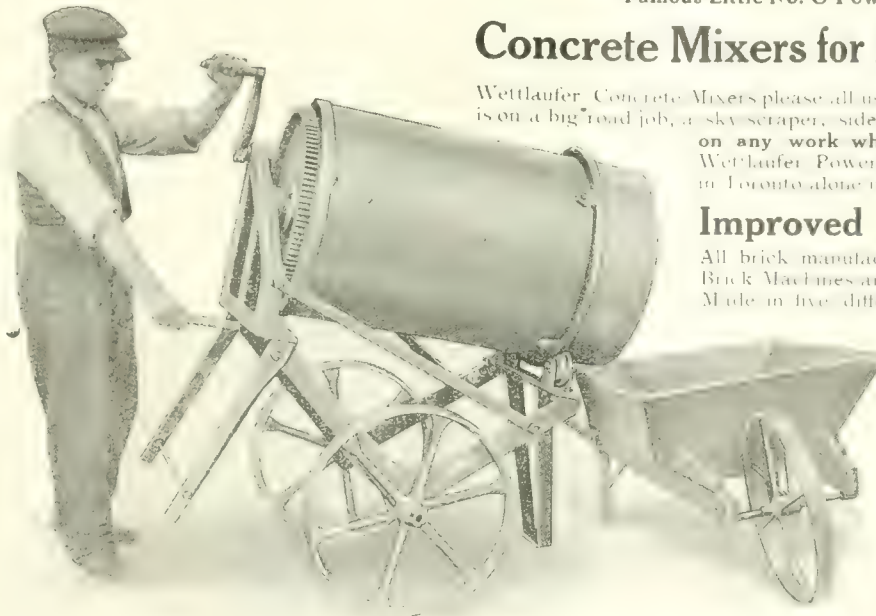
Famous Little No. O Power Mixer

Concrete Mixers for Every Purpose

Wettlaufer Concrete Mixers please all users whether the work required is on a big road job, a sky scraper, sidewalks or finishing up curbs **on any work where concrete is mixed.** 125 Wettlaufer Power and Hand Mixers were sold in Toronto alone in three seasons.

Improved Brick Machines

All brick manufactured by our New Improved Brick Machines are **polished on the two faces.** Made in five different sizes. Make your own brick with one of these machines and save money.



Our Efficient Hand Mixer

Write us, stating the nature of your requirements, and we'll convince you that we have the most economical equipment made.



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3743 Alexander St.
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Price List of Building Materials—Revised to Date

EDITOR'S NOTE. Great care is exercised in obtaining prices for this department. They are as accurate as it is possible for us to make them. We know, however, that because of varying conditions, different dealers' prices are bound to vary somewhat; and our purpose in publishing this department is to give readers an idea of prices, rather than absolutely definite information.

In some cases a range of prices appears. This is given to cover the variation in quotations given by different dealers, and also to cover slight variations in conditions of measurement or purchases, which space will not permit us to specify in detail.

We will be glad to give readers prices on materials not appearing here (hardwood flooring and hardware trim for instance), and also the names of dealers from whom such materials can be obtained. Such information will be supplied promptly if you write us specifying in detail what is desired.

PRICE AT MONTREAL

Hemlock Lumber

2 x 4 in. to 2 x 12 in., 8 to 14 ft.	\$24.00
2 x 4 in. to 2 x 12 in., 16 ft.	26.00
2 x 4 in. to 2 x 12 in., 18 ft.	28.00 to 30.00
1 in. hemlock No. 1	22.00
No. 1 hemlock decking	23.00 to 25.00
No. 2 hemlock dimensions and 1 in. ...	26.00 to 30.00

Pine

1 in. common and better pine 8 to 12 in. wide, rough	\$32.00 to 40.00
2 in. white pine, mill stock	20.00 to 33.00
7/8 x 8 and 10 in. pine shelving	36.00 to 45.00
7/8 x 12 pine shelving	42.00 to 50.00
No. 1 white pine flooring	40.00
No. 1 spruce flooring	30.00
No. 1 pine decking, D2S	40.00
No. 1 pine V. or beaded sheeting	40.00
No. 2 pine V. or beaded sheeting	30.00

Pine Trim for Paint Finish

4 in. casing, per 100 ft.	\$1.75
5 in. casing, per 100 ft.	2.10
8 in. pine base, per 100 ft.	3.25
10 in. pine base, per 100 ft.	4.20
4 in. pine window stool, per 100 ft. ...	2.75

Shingles, Lath Roofing, Etc.

No. 1 pine lath	5.00
No. 2 pine lath	4.50
No. 1 spruce lath	4.00

Cedar Posts—Fence

5 in. at small end	5c. foot
7 in. at small end	7c. foot

Hardware

Nails, wire, common	\$2.30 base keg
Nails, cut, common	2.50 " "
Sash weights, cast iron	1.50 per 100 lbs.
Tarred felt paper .....	.43 roll
Rolling paper .....	.35 roll

Brick, Tile, Terra Cotta, Sewer Pipe

No. 1 dry pressed red bricks	18.00
No. 1 dry pressed buff bricks	20.50
Red stock bricks	11.50
Grey stock bricks	12.00
Wire cut brick for foundation work...	10.00
Fire brick	25.00
Sewer pipe, 4 inch	10c. foot
Sewer pipe, 6 inch	15c. foot

Price at Montreal—Continued

Cement, Plaster, Stone, Etc.

Cement (bags extra)	1.85 bbl.
Sand, for cement or brick work	1.15 ton
Lime .....	.30 per 100 lbs
Hydrated lime	10.00
Mortar color	5.00 bbl.
Plaster of paris	3.00
Crushed stone, 2 in.	1.50
Crushed stone, 1 in.	1.60
Crushed stone, 3/4 in.	1.75
Hardwall plaster	\$9.50 to 12.00 neat
	6.50 sanded ton
Gravel	1.85 yard
Hair (plaster) .....	.03 per lb.

PRICE AT TORONTO

Hemlock Lumber

2 x 4 in. to 2 x 12 in., 8 to 14 ft.	\$24.00 to 29.00
2 x 4 in. to 2 x 12 in., 16 ft.	24.00 to 29.00
2 x 4 in. to 2 x 12 in., 18 ft.	26.00 to 30.00
1 in. hemlock No. 1	24.00 to 28.00
No. 1 hemlock decking	26.00 to 29.00
No. 2 hemlock dimensions and 1 in. ...	20.00 to 24.00

Pine

1 in. common and better pine 8 to 12 in. wide, rough	\$28.00 to 35.00
2 in. white pine, mill stock	29.00 to 34.00
7/8 x 8 and 10 in. pine shelving	33.00 to 40.00
7/8 x 12 pine shelving	45.00 to 48.00
No. 1 white pine flooring	34.00 to 37.00
No. 1 spruce flooring	27.00 to 32.00
No. 1 pine decking, D2S	28.00 to 33.00
Spruce decking	27.00 to 32.00
No. 1 pine V. or beaded sheeting	35.00 to 39.00
No. 2 pine V. or beaded sheeting	30.00 to 33.00

No. 1 Common Yellow Pine

2 x 4 in. to 2 x 14 in., 10 to 16 ft.	\$25.00 to 36.00
2 x 4 in. to 2 x 14 in., 18 to 20 ft.	29.00 to 38.00
2 x 4 in. to 2 x 14 in., 22 to 24 ft.	31.00 to 40.00

Yellow Pine Finish

4/4 x 6, 8, 10 and 12 B. & B. smoke finish	\$41.00
5 1/4 x " " " " " " " " " "	45.00
6 1/4 x " " " " " " " " " "	45.00
8 1/4 x " " " " " " " " " "	45.00
4 1/4 x " " " " " " " " " "	45.00 to 50.00
5/4 x " " " " " " " " " "	48.00 to 50.00
6 1/4 x " " " " " " " " " "	48.00 to 50.00
8 1/4 x " " " " " " " " " "	50.00 to 55.00

NOTE TO READERS. We would be glad to have suggestions from readers as to the extension or modification of this list.

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FOR THE CONVENIENCE OF READERS

Until the Directory is extensive enough to give you what you desire, we will be glad to have readers write us for names of Architects, Patent Attorneys, Engineers, etc., whom we can recommend.

For your convenience we are devoting this page to this "Professional Directory;" and in each issue we hope to see an added number of Professional Cards in this department. When you wish plans prepared—when you have an idea you wish to patent—form the habit of looking at this page in The Canadian Builder and Carpenter.

The CANADIAN BUILDER & CARPENTER 32 COLBORNE ST. TORONTO

Price List of Building Materials—Continued.

Price at Toronto Continued

Pine Trim for Paint Finish

4 in. square pine trim, per 100 ft.	\$1.80 to 2.00
6 in. square pine trim, per 100 ft.	2.00 to 2.50
8 in. square pine trim, per 100 ft.	2.75 to 3.25
10 in. square pine trim, per 100 ft.	4.00 to 4.50
4 in. square window stool, per 100 ft.	3.00

Hardwood Trim, Flooring, Etc.

Quantities will be given on request.
See contractor's note above.

Shingles, Lath Roofing Etc.

XXX B. C. cedar shingles	\$3.60 per M
No. 1 B. C. shingles	4.00
No. 2 B. C. shingles	5.00 to 5.50 per M
No. 1 pine lath	4.75 to 5.00
No. 2 pine lath	4.75
No. 1 spruce lath	1 ply \$1.00 per sq.
No. 2	2 ply 2.00 "
No. 3	3 ply 2.40 "

Cedar Posts—Fence

5 in. at small end	.25 each
7 in. at small end	.50 each

Hardware

Nails, wire, common	\$2.35 cwt.
Nails, cut, common	2.95
Sash weights, cast iron	1.75
Tarred felt paper	.65 roll
Building paper	.45

Glass

United inches	Star	D.D.
Up 15	\$4.25	6.25
26-40	4.65	6.75
41-50	5.10	7.50
51-60	5.35	8.50
61-70	5.75	9.75
71-80	\$6.25	\$11.00
81-85	7.00	12.50
86-90	7.75	15.00
91-95		17.50
96-100		20.50
101-105		24.00
106-110		27.50

Less 10 per cent. on Star and 25 per cent. on D.D. f.o.b. Toronto.
Wired glass 18c. to 20c. per sq. ft.

Brick, Tile, Terra Cotta, Sewer Pipe

No. 1 dry pressed red bricks	\$15.00 to 18.00 pr M
No. 1 dry pressed buff bricks	11.50 to 18.00
Red stock bricks	10.00 to 12.50
Sand lime brick	9.25 to 9.75
Grey stock bricks	10.50 to 12.50
Sewer brick	11.00
Wire cut brick for foundation work	9.25 to 10.50
Porous terra cotta bricks	12.00 to 15.00
No. 1 enamelled bricks, all colors, from	80.00 to 150.00
Fire brick	26.00 to 30.00
Tapestry brick	20.00 to 34.00
Sewer pipe, 4 inch	10c. foot
Sewer pipe, 6 inch	16c. foot
Verandah post caps, 16 in.	1.45 each
20 in.	1.75 "
Chimney caps, 1 flue in 1 piece	2.00 "
2 flues in 2 pieces	3.50 "
3 flues in 3 pieces	5.00 "

Cement, Plaster, Stone, Etc.

Cement (bags extra)	\$1.85 bbl. (1.55 in car lots)
Sand, for cement or brick work	1.75 a yard

Price at Toronto—Continued

Plaster (bags extra)	.38 cwt.
Hydrated lime (Canadian)	10.00 ton
Hydrated lime (American)	11.00 "
Mortar color	black, 3; red 1½
Plaster of paris	\$1.50 to 2.50
Crushed stone, 2 in.	1.30 to 1.40
Crushed stone, 1 in.	1.45
Crushed stone, ¾ in.	1.50
Hardwall plaster	8.60
Gravel	4.60 sanded
Hair (plaster)	1.80
	.07 lb.

PRICE AT WINNIPEG

Hemlock Lumber

2 x 4 in. to 2 x 12 in., 8 to 14 ft.	\$29.00
2 x 4 in. to 2 x 12 in., 16 ft.	29.00
2 x 4 in. to 2 x 12 in., 18 ft.	29.00

Shingles, Lath Roofing, Etc.

XXX B. C. cedar shingles	\$4.00 & 3.50 per M
No. 1 pine lath	5.75 per M
Metal lath	.16 to .20
Roofing felt (2 ply)	2.50 per roll

Hardware

Nails, wire, common	\$3.00 per keg
Nails, cut, common	3.35
Sash weights, cast iron	2.75 cwt.
Tarred felt paper	1.00 per roll
Building paper	.90
Insulating paper	1.25

Glass

United inches	Single	Double
Up 25	\$4.75	6.50
26-40	\$5.10	\$7.00
41-50	5.65	8.00
51-60	6.15	8.75
61-70	6.65	9.50
71-80	7.25	10.50
81-85		11.50
86-90		12.50
91-95		14.50
96-100		17.00
101-105		19.50
106-110		22.50

Brick, Tile, Terra Cotta, Sewer Pipe

No. 1 dry pressed red bricks	\$25.00 to 50.00
No. 1 dry pressed buff bricks	25.00 to 50.00
Red stock bricks	13.00
Sand lime brick	12.00
Porous terra cotta bricks	18.00 per M
No. 1 enamelled bricks, all colors, from	100.00
Fire brick	45.00
Oriental brick	35.00
Sewer pipe, 4-inch	.10½ per ft.
Sewer pipe, 6 inch	.16½ per ft.

Cement, Plaster, Stone, Etc.

Cement (bags extra)	\$2.50 per bbl.
Sand, for cement or brick work	1.75 a yard
Lime	.32 per bu.
Hydrated lime	12.00 per ton
Mortar color	.05 per lb.
Plaster of paris	0.75 per bag
Crushed stone, 2 in.	2.50 per yard
Crushed stone, 1 in.	2.75

NOTE TO READERS. We would be glad to have suggestions from readers as to the extension or modification of this list.

Price List of Building Materials—Continued.**Price at Winnipeg—Continued**

Crushed stone, $\frac{3}{4}$ in.	2.75
Hardwall plaster	12.00 per ton
Gravel	1.85 per yard
Hair (plaster)	1.25 per bale

PRICE AT VANCOUVER**Shingles, Lath Roofing, Etc.**

XXX B. C. cedar shingles	\$2.20 & 2.10 per M
No. 1 pine lath	2.25 per M

Hardware

Nails, wire, common	\$3.25 per keg
Nails, cut, common	4.25
Tarred felt paper .....	.90 per roll
Building paper .....	.70

Price at Vancouver—Continued**Brick, Tile, Terra Cotta, Sewer Pipe**

No. 1 dry pressed red bricks	\$45.00 per M
No. 1 dry pressed buff bricks	45.00
Red stock bricks	13.00
Fire Brick	45.00
Sewer pipe, 4-inch .....	.14 per ft.

Cement, Plaster, Stone, Etc.

Cement (bags extra)	\$3.00 per bbl.
Lime	1.25 per bbl.
Hydrated Lime	4.25 per bbl.
Plaster of paris	4.50 per bbl.
Hardwall plaster	14.50 per ton
Hair (plaster)	14.50 per ton

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Wettlaufer Bros., Toronto, Ont.

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London Concrete Machinery Co., London, Ont.

Sasgen Derrick Co., Toronto.

Stuart Machinery Co., Ltd., Winnipeg.

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Benson & Bray, Midland.
Georgian Bay Shook Mills, Midland.
Wilson Bros. Ltd., Collingwood.
York Lumber Co., Toronto.

Door Trimmings

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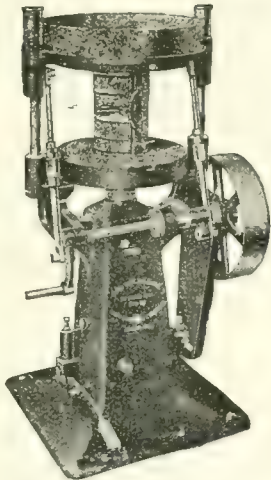
Felts (Tar)

Canadian H. W. Johns-Manville Co., Toronto.

Fences

Dennis Wire & Iron Works Co., London.

Drain Tile Machines — Drum Batch Mixers



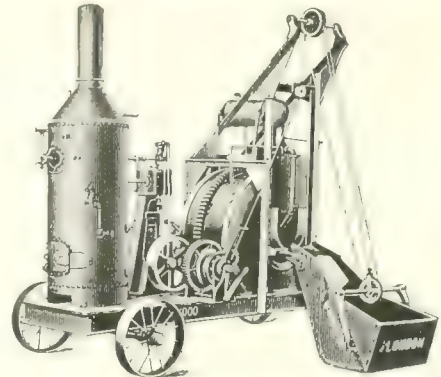
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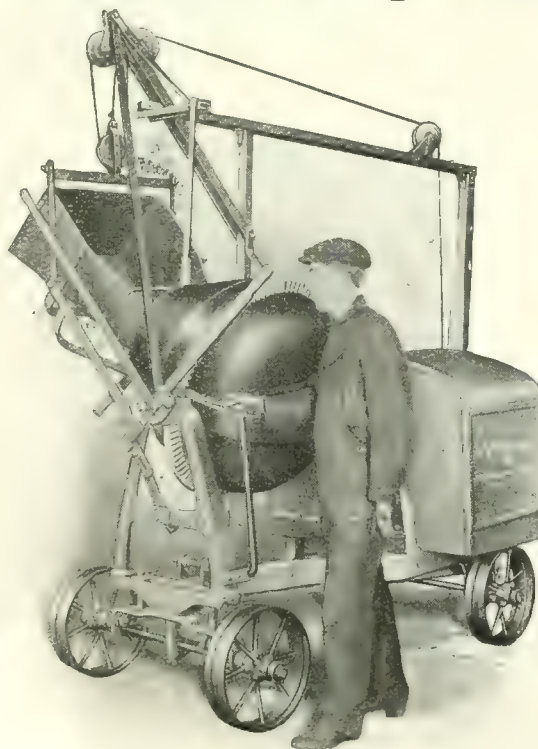
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 The R. Laidlaw Co., Limited, Toronto.
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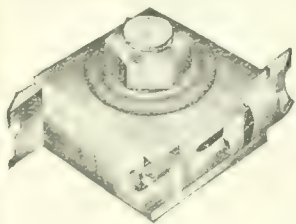
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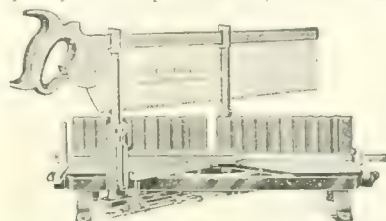
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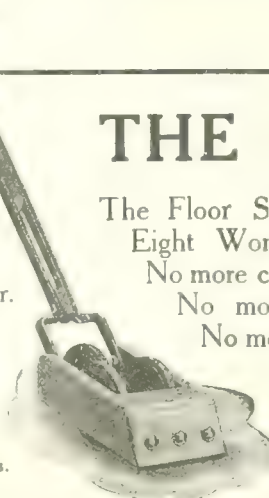
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ronto.

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London Concrete Machinery Co., Lon-
don, Ont.

Tile Machine, Sidewalk
London Concrete Machinery Co., Lon-
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don, Ont.

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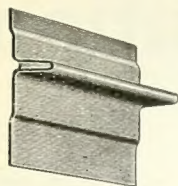
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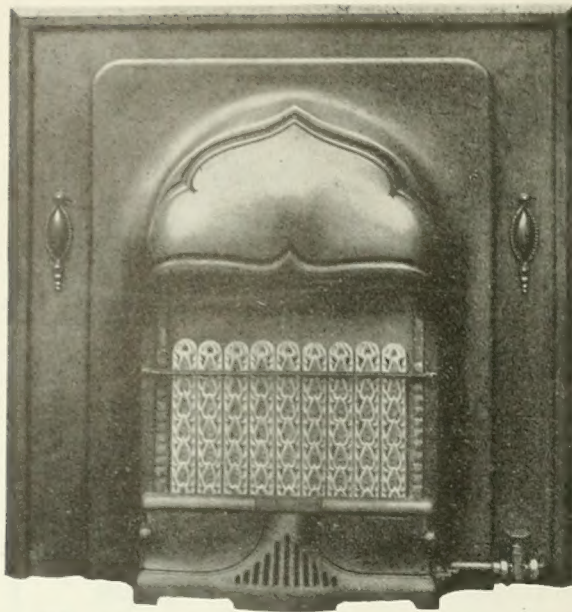
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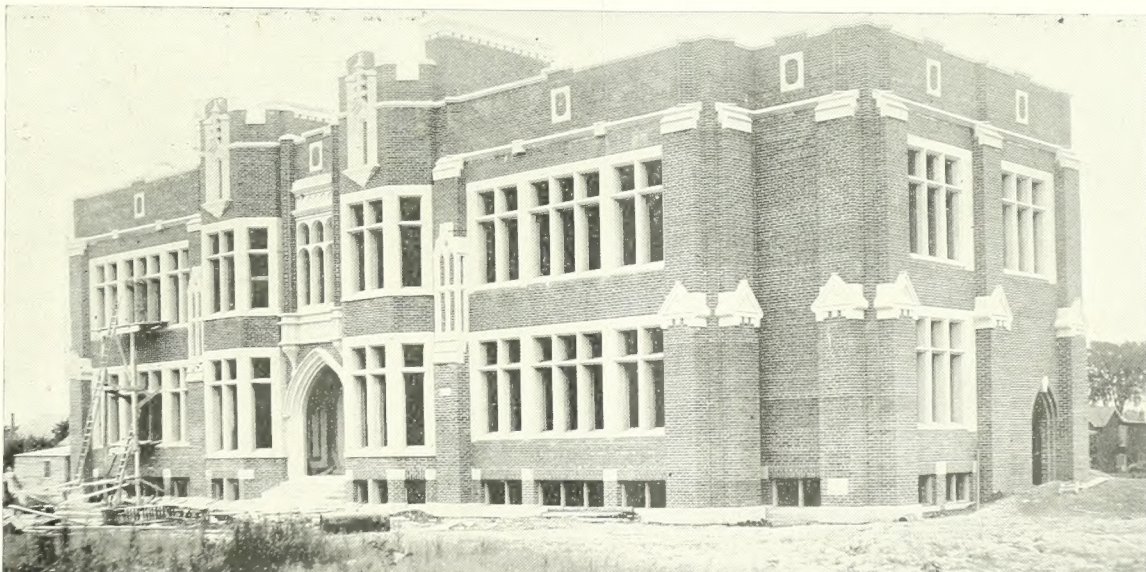
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